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DISEASES CAUSED BY BACTERIA AND FUNGI

ROTTGARDT, A. A., & ZULOAGA, E. P. (1946.) Contribucion al estudio de la relacion entre la pigmentogenesis del genero staphylococcus y las pruebas de la coagulasa, hemolisis y cristal violeta. **[The relation between pigment production in staphylococci and the coagulase test, haemolysis and growth on crystal violet medium.]**—*Rev. Med. vet., B. Aires.* **28.** 383–403. **1**

After a study of strains of staphylococci from various sources—human beings and animals and from the atmosphere—using pigment production, the coagulase test, study of haemolysis, and of the effect on colonies of adding crystal violet to plate culture medium, the authors came to the conclusion that it was not possible to correlate pathogenicity with behaviour in these tests.

—F. A. ESTEVES.

EVANS, A. C. (1947.) **Studies on hemolytic streptococci. IX. Differentiation of species in streptococci of Group A.**—*J. Bact.* **53.** 489–496. [Author's summary copied *verbatim.*] [For previous parts, see *V. B.* **17.** 64.] **2**

A study of many strains of beta hemolytic streptococci of group A showed that correlations exist between fermentative, agglutinative, and immunologic behavior.

The information at hand permits the recognition of two well-defined species, *Streptococcus scarlatinae* and *Streptococcus potens* n.sp. The rough outlines of three other species, *Streptococcus pyogenes*, *Streptococcus epidemicus*, and *Streptococcus alactosus* are taking shape, but further study is required to determine the lines of distinction.

A typical strain of *S. potens* n. sp. belongs to Griffith's type 3; possesses a high degree of virulence for mice; belongs to an immunologic entity unrelated to other species; produces no peroxide; and is very sensitive to the bacteriostatic action of sulfanilamide.

On account of the peculiar characteristics of *S. potens* n.sp., conclusions as to the behavior of strains of other species of group A should not be drawn from tests in which strains of this species are the subject of experimentation.

BOUVIER, G. (1947.) Sur la teneur en bacilles de Koch du mucus trachéo-bronchique des bovidés tuberculeux. **[Tubercle bacilli in the tracheo-bronchial mucus of tuberculous bovines.]** —*Schweiz. Arch. Tierheilk.* **89.** 350–351. [In French.] **3**

A brief note on the results of g. pig inoculations in tests on 76 cattle, most of which were tuberculous.—A. LOOSMORE.

ROUSHDY, A. (1948.) **The incidence of tubercle bacilli in Cairo market milk.**—*Vet. J.* **104.** 91–97. **4**

Two hundred milk samples (38% raw, 40% mixed and 22% boiled) were collected from different sections of Cairo and examined for the incidence of tubercle bacilli by the microscopic method, the cultural method and animal inoculation.

From animal inoculation no results were available in 44 samples, presumably because the milk was contaminated by other pathogenic organisms. Two of the remaining 156 samples contained tubercle bacilli (1·5%). Only one of these samples was detected by the cultural method. Neither infected sample was detected by microscopic examination.—J. O. L. KING.

WALLGREN, A. J. (1948.) **The principles of B.C.G. vaccination.**—*Lancet.* **254.** 237–239. **5**

A description of BCG vaccination in a community in Sweden, the principles which should be followed and the pitfalls to be avoided.

Three recent works are quoted to support the plea for efficient vaccination.—J. DEANS RANKIN.

BIRKHAUG, K. (1947.) **Vaccination against tuberculosis with BCG.**—*Psychiat. Quart.* **21.** 453–473. **6**

The development of the use of BCG vaccination in man from its discovery in 1920 is reviewed. Special reference is made to the island of Bornholm in Denmark. Following the eradication of bovine tuberculosis from that island the number of tuberculin negative people in the population of 55,000 became much higher than elsewhere in Denmark until over 50% of the population were

tuberculin negative. It was found that when tuberculin negative adolescents and adults left the island they invariably became infected and later returned home as tuberculous patients. BCG vaccination of all tuberculin negative persons on the island was made compulsory and the incidence of tuberculous infection in those leaving the island for the mainland is said to have been greatly reduced. It is claimed that vaccination with BCG is accomplishing what the ubiquitous bovine tuberculosis infection did formerly but without causing such tuberculous conditions as scrofula, lupus and bone and joint tuberculosis. B. concludes that BCG vaccination is absolutely harmless, that it produces tuberculin allergy in about 95% of vaccinated persons within two months, that the average duration of allergy exceeds five years and that the protection produced against virulent infection is almost as effective as that acquired as a result of natural spontaneous infection. It is, he considers, the most effective adjunct we possess to-day to the conventional tuberculosis control methods.—M. C.

BIRKHAUG, K. (1948.) **BCG and the newer epidemiology of tuberculosis.**—*Bull. N.Y. Acad. Med.* **24.** 412–430. [Author's summary copied *verbatim.*] **7**

Experimental studies and clinical experience prove that a spontaneous primary infection with tubercle bacilli which renders the organism hypersensitive to tuberculin confers an incomplete but relatively significant resistance against a subsequent tuberculous infection, and that the first victims of tuberculous disease are tuberculin-negative individuals who have escaped a spontaneous and non-progressive primary tuberculous infection.

A direct result of the modern trend to defer the primary tuberculous infection from childhood to adult life is an increasing susceptibility among tuberculin-negative individuals of early adult age to contract a serious clinical tuberculosis when they are intimately exposed to infection with tubercle bacilli.

This modern trend in the epidemiology of tuberculosis has brought about a reorientation toward the use of artificial immunization against tuberculosis by means of killed or attenuated living tubercle bacilli. So far, only the avirulent and living BCG (Bacille Calmette-Guérin) vaccine has produced regularly hypersensitiveness to tuberculin and a significant protection against tuberculosis in millions of people over more than 20 years.

There exists a lamentable lack of unassailable statistical proof of the effectiveness of BCG under rigidly controlled conditions in man although such evidence is highly suggestive in animal experimentation. Nevertheless, universal unanimity obtains as to its harmlessness and near unanimity in regard to its almost complete protection against the clinical manifestations of post-primary tuberculosis in children and an incomplete but highly significant protection against clinical pulmonary tuberculosis in adults.

BCG vaccine should be recommended for extensive use in the United States in tuberculin-negative reactors in groups occupationally exposed to tuberculous infection and in population groups with high tuberculosis mortality and morbidity, and where there has been known exposure to tuberculosis or where an exposure is likely to occur.

*STENIUS, R. (1942.) Das Tuberkulin und die Feststellung des Bakterien-typus. **[Tuberculin and the determination of bacterial type.]**—*Suom. Eläinlääkääril.* No. 7. p. 153. [Abst. from abst. in *Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* August 20th. **286.** (1943).] **8**

The use of tuberculin made from bovine as well as from human type organisms does not solve the problem of interpreting doubtful reactions to the intradermal test. Nor is it possible by simultaneous use of these two types of tuberculin to determine the type of infection in a reacting animal.—E. KODICEK.

—. (1946.) **Tuberculosis [Histoplasmin sensitivity.]**—*Rep. Rockefeller internat. Hlth. Div., 1946.* pp. 133–136. **9**

In the course of a survey in Tennessee it was found that children with non-tuberculous calcified pulmonary lesions, and yielding negative reactions to tuberculin were in some instances positive to histoplasmin and in others negative.

It was inferred that other organisms than *H. capsulatum* and the tubercle bacillus were responsible for these calcified pulmonary lesions.
—E. KLIENEBERGER-NOBEL.

MCINTOSH, C. W., & KONST, H. (1947.) **Comparison of human and bovine type tuberculin on guinea pigs sensitized with several acid-fast microorganisms.**—*Canad. J. comp. Med.* **11.** 93–101. **10**

Using equal dilutions of comparable serial dilutions of S.O.T. tuberculins (tuberculin prepared from synthetic medium), from human type, bovine, and avian type tubercle bacilli and from *Mycobact. johnei* the authors found that human type tuberculin was two and a half times more potent than bovine type.

In groups of g. pigs sensitized with the avian type and with Johne's bacillus more than four times the dose of bovine type tuberculin was required to produce reactions comparable to those produced by the human type. The human type

tuberculin produced greater reactions in g. pigs sensitized with the heterologous type than might have been expected from its potency.

They conclude that the antigenic range of human type tuberculin is greater than that of bovine type tuberculin, but that by the use of P.P.D. tuberculin this difference in the qualities of the two products is reduced.—R. GWATKIN.

IZZO, R. A., & CICARDO, V. H. (1946.) **The thyroid and tuberculosis. [Correspondence.]**—*Nature, Lond.* **158.** 590. **11**

The authors discuss the effect of the influence exerted by thyroxin and hypothyroidism on experimental TB. in g. pigs.

Thyroidectomized g. pigs are more susceptible to TB. than are normal g. pigs while those injected with 30 μg. of thyroxin twice a week are more resistant against TB. During the four weeks following the TB. inoculations, there were 30% deaths in the thyroidectomized animals, 5% in the controls, and none in those which received thyroxin.

During the third month mortality was 75% in the thyroidectomized animals, 60% in the controls and only 15% in the hyperthyroid animals. During the seventh month the only survivors were 15% of the thyroxin treated animals.

Resistance against TB. was greater in g. pigs in which thyroxin treatment had been instituted one month before inoculation. The greater resistance towards TB. infection of the animals injected with thyroxin appears to be due to tuberculostatic activity, or to greater immunity, for example, increase of complement, of opsonic index and of micro- and macro-phagocytary activities.—E. M. J.

BARRY, V. C. (1946.) **The thyroid and tuberculosis. [Correspondence.]**—*Nature. Lond.* **158.** 131–132. **12**

NOLAN *et al.* (1945) described the isolation of diploicin from the lichen *Buella canescens.* B. discussed the preparation from diploicin of a soluble compound which inhibited completely the growth *in vitro* of *Mycobacterium smegmatis* at a dilution of 1 : 70,000 and *M. tuberculosis* at 1 : 100,000 for 42 days.

Since the chemical structure of thyroxin resembles that of diploicin, B. thought that excessive secretion of thyroxin might provide a defence against the spread of TB. in the animal body. Thyroxin does not, however, appear to exert any effect on the growth *in vitro* of the tubercle bacillus, neither does the oral administration of diploicin to g. pigs produce any of the symptoms associated with hyperactivity of the thyroid gland.

The amount of thyroxin in the animal body is probably too small to have a direct effect on the tubercle bacilli, and possibly the resistance to the spread of TB. in hyperthyroid cases is due to an indirect action as, for example, the hyperplasia of lymphoid tissue which takes place.

While admitting that the hypothesis may prove to be invalid B. considers that the coincidence is too striking to be passed over without thorough investigation.—E. M. J.

BARRY, V. C. (1946.) **Anti-tubercular compounds.**—*Nature.* **158.** 863–865. **13**

In discussing substances which have been tested against TB. in experimental animals, B. summarizes the properties to be expected of an effective agent. Chaulmoogra oil contains two fatty acids with branched chains. From the lipoid material of the tubercle bacillus, tuberculostearic and phthioic acids have been isolated and each of these acids has a branched chain structure. This led to the synthesis of a large number of disubstituted acetic acids. These were found to be most active *in vitro* when the molecule contained 15–17 carbon atoms. B. found that with mono- and disubstituted succinic acids this number pattern was repeated in that these compounds were most active when the chain-length of the alkyl substituents contained from 13–15 carbon atoms. These compounds seem to be active in animals. Derivatives of diaminodiphenyl sulphone had some success in infected g. pigs. Various alkyl thiomalic and alkane sulphonyl succinic acids were synthesized and found to have a strong inhibitory action *in vitro.*

A halogenated diphenyl ether derived from diploicin is strongly inhibitory to the tubercle bacillus *in vitro.* Experiments involving various changes in the molecule suggest the necessity for a free phenolic hydroxyl group for maximum activity. The only substance of the halogenated phenyl ether type normally found in the animal body is thyroxin [see abst. 12]. B. indicated that hyperthyroidism and the resulting hypersecretion of thyroxin might provide a defence against tuberculosis. IZZO & CICARDO [see abst. 11] report that injections of thyroxin will prolong the life of tuberculous g. pigs and that thyroidectomized g. pigs show a lessened resistance to tubercular infection.—A. A. WILSON.

STAVITSKY, A. B., & BECK, J. D. (1946.) **Reaction of the developing chicken embryo and the chorioallantoic membrane to inoculation with various strains of *Mycobacterium paratuberculosis.* (Johne's bacillus.)**—*Amer. J. vet. Res.* **7.** 470–476. **14**

The authors describe the technique of infecting the eleven-day incubated egg, making a

"window" sealed by "Scotch tape," so that visual observations could be made. A number of strains including some of English origin were used.

One strain designated M. grew freely without *Mycobact. phlei* or other artificial means of stimulating growth. The infection was characterized by extensive multiplication of the bacilli with proliferation of the ectoderm and mesoderm and development of giant cells. The other strains required *M. phlei* but did not produce an active infection, although considerable proliferation of the cells took place. Non-acid-fast forms of *Mycobact. johnei* were found in some eggs. This stage of the organism stained freely with methylene blue.—W. R. KERR.

MORETTI, B. (1941.) Sulla linfoadenite caseosa degli ovini. (Osservazione clinica e ricerche sperimentali sul ch. di Preisz-Nocard.) [**Caseous lymphadenitis in sheep. (Clinical observations and experimental investigations on** *Corynebacterium ovis.*)]—*G. Batt. Immun.* **24.** 543–557. [English, French and German summaries.] **15**

A conventional article.—K. J. SINCLAIR.

MORGAN, B. B., JOHANSSON, K. R., & EMERSON, E. Z. (1946.) **Some corynebacteria isolated from the genital tract of bulls.**—*M[ich]. S[t]. C[oll]. Vet.* **6.** 68–69 & 72–74. **16**

In a study of 43 cultures of corynebacteria isolated from the sheath of 16 out of 54 normal bulls, the authors concluded that 10 strains were *Corynebact. pyogenes*, 18 were *Corynebact. renale*, the remainder being unidentified. The cultural characters of the strains are tabulated.—B. WEITZ.

LINGGOOD, F. V., & FENTON, E. L. (1947.) **The production of diphtheria toxin by submerged culture in shaking flasks.**—*Brit. J. exp. Path.* **28.** 354–364. **17**

Following the successful production of penicillin by submerged culture methods, the authors tried them for the production of diphtheria toxin.

A toxin of a titre of 50–70 Lf units per ml. was produced in three days using routine digest media containing an increased proportion of maltose. Sterilization of the medium by autoclaving was found to have no effect on subsequent toxin production, provided the maltose was added afterwards.

The use of tributyl citrate as an antifoam was found to inhibit both growth and toxin production, but undecanol in lard oil had no inhibitory effect.

Of materials which may be used in large-scale plant construction, it was found that copper, nickel and stainless steel might inhibit toxin production under certain conditions, but aluminium, "birmabright" and silver had no such effect.

Using this technique and by passing sterile air through broth adequately stirred in glass vessels toxin can be obtained in two or three days, of a titre equivalent to that produced in ten days by surface growth.—R. M. LOOSMORE.

ELEK, S. D. (1948.) **The recognition of toxicogenic bacterial strains** *in vitro.*—*Brit. med. J.* March 13th. 493–496. **18**

A new technique for the *in vitro* detection of bacterial toxicogenicity based on the production of opacity by the toxin-antitoxin reaction is described. The strains to be tested are streaked on agar plates with which antitoxin has been incorporated by placing a strip of filter paper moistened with antitoxin on the surface of the medium. The results obtained with a small series of *C. diphtheriae* strains appeared to be clear cut, and there was a high correlation between the toxicogenicity as detected by the new plate method and the virulence as detected by the g. pig test. The results obtained with staphylococci were not so well defined. The possible application and further development of the new technique are discussed.—E. KLIENEBERGER-NOBEL.

PIGOURY, L. (1948.) Titrage de la malléine par floculation et par déviation du complément: comparaison des deux méthodes d'après les réactions *in vivo*. [**Titration of mallein by precipitin test and by complement fixation.**]—*C. R. Soc. Biol. Paris.* **137.** 336–337. **19**

In P.'s experience titration of mallein by the precipitin test corresponds more closely with the degree of reaction to the subcutaneous test than does titration by complement fixation. This he explains as possibly due to the precipitin test being closely akin in mechanism to the allergic response in the infected animal: antigen and antibody interact "in a manner direct, specific and strictly quantitative." He admits that his views are more in the nature of a hypothesis which must yet be put to the test by the degree of reaction in infected horses subjected to the subcutaneous inoculation of different preparations of mallein titrated by the above two *in vitro* methods.—L. M. MARKSON.

ZHUKOV, G. V., & DRYAGIN, S. V. (1948.) Prizhiznennaya diagnostika khronicheskikh form rozhi svinei. [**Diagnosis during life of chronic swine erysipelas.**]—*Veterinariya, Moscow.* No. 10–11. pp. 19–21. **20**

The clinical signs of *Erysipelothrix rhusiopathiae* infection in swine (slow growth, lameness, failure to fatten) are often thought to be signs of avitaminosis.

In slide agglutination tests on 1,600 pigs 4·3% of chronic infection was diagnosed. The authors recommend mass testing by this method prior to housing for the winter. Great stress is

also laid on de-ratting of pig sties and general sanitary and hygienic measures for the control of this disease.—K. A. ALLEN.

PIERCY, S. E. (1947). **Swine erysipelas in Kenya.**—*Vet. Rec.* **59.** 646–648. **21**

For the first time, *Erysipelothrix rhusiopathiae* infection has been diagnosed in pigs in Kenya. A mild form occurred in three isolated cases. The characters of the strains isolated are described.—J. KEPPIE.

REMLINGER, P. (1945.) Chromo-vaccination du rouget du porc. [**Basic fuchsine vaccine for swine erysipelas.**]—*Arch. Inst. Pasteur Algér.* **23.** 178–179. **22**

Rabbits vaccinated with broth culture of *Erysipelothrix rhusiopathiae* treated with carbol fuchsine withstood a test dose with live culture. —D. LUKE.

POUNDEN, W. D., & EDGINGTON, B. H. (1946.) **Listerellosis in Ohio.**—*J. Amer. vet. med. Ass.* **110.** 107. **23**

An outbreak caused by *Erysipelothrix* (*Listeria*) *monocytogenes* is reported in sheep, causing disturbances of the C.N.S. and many deaths. The organism was isolated from the brains of some of the lambs.—J. I. TAYLOR.

POUNDEN, W. D., BELL, D. S., & MAIRS, R. E. (1947.) **An outbreak of acute bovine listerellosis.**—*J. Amer. vet. med. Ass.* **111.** 128–129. **24**

Twenty-seven Aberdeen Angus calves, three months old, were driven through a field previously occupied by a flock of sheep in which cases of listerellosis had been reported [see preceding abst.]. Between seven and ten days later eight deaths had occurred among the calves. P.M. examination revealed petechial haemorrhages in heart and kidney tissues and marked hyperaemia and oedema of the lungs. In the one head examined the meninges were slightly inflamed and *Erysipelothrix* (*Listerella*) *monocytogenes* was isolated from the brain. The remaining calves had a mild conjunctivitis.—J. I. TAYLOR.

LUKE, D. (1947.) **Pasteurellosis in swine.**—*Vet. Rec.* **59.** 409–411. **25**

An outbreak of *P. suiseptica* infection occurred in Northern Ireland during exceptionally cold weather. There were four deaths among 24 pigs and P.M. examination revealed an acute apical pneumonia in the consolidated areas of which were small foci containing pus. The organism was isolated in pure culture from the lungs and when inoculated subcutaneously killed rabbits and g. pigs. Three young pigs inoculated with the organism remained apparently well. The 20 surviving pigs were killed and lesions of the chronic pneumonia were found, with caseous areas, pleurisy and adhesions.—J. I. TAYLOR.

ANON. (1948.) **Plague infection reported in the United States in 1947.**—*Publ. Hlth. Rep.* **63.** 1102–1105. **26**

An account of infection in a human being in California, infection probably having been acquired in an area in which "wood rats" (*Neotoma sp.*) were found to be affected.

A brief account is given of infection in wild rodents and their ectoparasites in the U.S.A.

NETER, E. (1947.) **Yeast autolysate: a culture medium for** *Hemophilus influenzae.*—*Science.* **106.** 350–352. **27**

Yeast autolysate (a filtrate of autolysed fresh yeast) was found to contain the necessary V and X factor for the growth of *Haemophilus influenzae.* All the 19 strains used gave a profuse growth within 24 hours in 10% yeast autolysate brain heart infusion, whereas controls in brain heart infusion produced no growth. In 10% yeast autolysate saline growth was less profuse and took place more slowly.—D. LUKE.

WRAMBY, G. O. (1946.) Serologisk tybestämning av kolibakterier renodlade från spädkalvar. [**Serological type determination of coliform bacteria isolated from unweaned calves.**]—*Skand. VetTidskr.* **36.** 370–377. [English and Swedish summaries. Abst. from English summary.] **28**

W. describes investigations on the antigenic structure of coli-bacteria [see KAUFFMANN & VAHLNE—*V. B.* 18. 449]. The strains used were from unweaned calves which died from a general infection with coli-bacteria. Diagnostic sera were produced with test strains which were specified in the Kauffmann-Vahlne coli-antigen scheme [VAHLNE: Serological typing of the Colon Bacteria. *Dissertation Lund.* (1945)]. The somatic as well as the capsular and flagellar antigens were identified; types of coli-bacteria which do not occur in man were found, especially three strains most frequently found in calves with septicaemia. They had the antigenic structure O8, K20, 24, –O9, K30, 34, –O15, H28; using the Kauffmann-Vahlne coli-antigen scheme. The occurrence of different O-groups does not correspond to observations made on material taken from human beings. —E. V. L.

RUDERT, F. J., & FOTER, M. J. (1947.) **Bacillin production by soil isolates.**—*J. Bact.* **54.** 793. **29**

Forty-six soil samples were examined for bacilli antagonistic to *Bact. coli.* In 23 samples an organism was found, which formed viscous and wrinkled colonies. The properties of the active substance indicated an identity with bacillin. The

wide-spread occurrence of the antagonistic organism suggests that it may have a role in controlling the microflora of the soil.—E. K.-N.

SALE, L., Jr., & WOOD, W. B., Jr. (1947.) **Studies on the mechanism of recovery in pneumonia due to Friedländer's bacillus. I. The pathogenesis of experimental Friedlander's bacillus pneumonia.**—*J. exp. Med.* **86.** 239–248. [Authors' summary copied *verbatim.*] **30**

Experimental pneumonia due to Friedländer's bacillus was produced in white rats by the intrabronchial inoculation of the bacilli suspended in mucin. The pneumonia was lobar in type, was almost uniformly fatal, and simulated the acute form of the natural disease in human beings.

The pathogenesis of the pneumonic lesion was studied by examination of microscopic sections of the lungs of animals killed at frequent intervals during the course of the infection. The histologic characteristics of the various stages of the pneumonia were essentially the same as those previously described in experimental pneumococcal (Type I) pneumonia except for the following differences: (1) In isolated areas of the lung in Friedländer's pneumonia many more bacteria were encountered in the alveoli than were ever noted in experimental pneumococcal pneumonia. (2) Abscess formation was common in the late stages of Friedländer's infection, whereas it was not noted in the pneumococcal lesion. (3) Organization of the alveolar exudate, rarely observed in experimental pneumococcal pneumonia, was a prominent feature of the pneumonia due to Friedlander's bacillus.

The mechanism of spread of Friedländer's lesion appeared to be the same as that of pneumococcal pneumonia. Likewise there was noted the same phagocytosis of organisms in the lungs of even bacteremic animals dying of the infection.

SALE, L., Jr., SMITH, M. R., & WOOD, W. B., Jr. (1947.) **Studies on the mechanism of recovery in pneumonia due to Friedländer's bacillus. II. The effect of sulfonamide chemotherapy upon the pulmonary lesion of experimental Friedländer's bacillus pneumonia.**—*J. exp. Med.* **86.** 249–256. [Authors' summary copied *verbatim.*] **31**

Sulfonamide chemotherapy was found to cure rats of an otherwise fatal form of experimental Friedlander's bacillus pneumonia when treatment was begun 6 hours after inoculation. Most of the pneumonic lesions cleared completely, but an occasional animal exhibited small residual abscesses in the previously consolidated lung.

The recovery process taking place in the lungs was studied histologically at various intervals during therapy. As in the case of pneumococcal pneumonia, the principal action of the sulfonamide was upon the bacteria in the advancing edema zone at the periphery of the pneumonic lesion. The bacteriostatic action of the drug appeared to stop the spread of the pneumonia, and the Friedländer bacilli were ultimately ingested and destroyed by the phagocytic cells in the alveolar exudate.

The phagocytosis of bacteria in the lung was shown to be unrelated to the presence of antibody in the blood.

SMITH, M. R., & WOOD, W. B., Jr. (1947.) **Studies on the mechanism of recovery in pneumonia due to Friedländer's bacillus. III. The role of "Surface phagocytosis" in the destruction of the microorganisms in the lung.**—*J. exp. Med.* **86.** 257–266. [Authors' summary copied *verbatim.*] **32**

Phagocytosis of encapsulated Friedländer's bacilli has been demonstrated in the lungs of rats in the absence of both circulating and local antibody. The mechanism of phagocytosis independent of antibody has been shown to be due to he same surface factors that operate in the phagocytosis of Type I pneumococcus under similar conditions. Direct observation of the phagocytic process reveals that leucocytes in the lung can phagocyte unopsonized Friedländer's bacilli only by trapping them against the surfaces of alveolar walls or bronchi, or by pinning them against the surfaces of adjacent leucocytes. Evidence is presented that Friedlander's bacilli thus phagocyted are rapidly killed in the cytoplasm of the phagocytic cells. Reasons are discussed for the failure of prolonged chemotherapy to cure lung abscesses that not infrequently complicate the pneumonia due to Friedländer's bacillus.

MORGAN, H. R., & BENNETT, G. A. (1947.) **Intra-articular changes induced in rabbits by injection of typhoid somatic antigen.**—*Arch. Path.* **44.** 609–620. [Authors' summary copied *verbatim.*] **33**

Typhoid somatic antigen when repeatedly injected into the knee joints of rabbits produces acute arthritis, which gradually becomes chronic, leading to hypertrophy of the synovial tissues, with focal accumulations of lymphoid cells in the subsynovial layers, accompanied by destruction of the joint cartilage. No differences were noted between the lesions produced in normal rabbits and those in rabbits that had received previous intravenous injections of typhoid antigens.

When the Shwartzman reaction is induced in the skin and the knee joint, there is extensive vascular injury, resulting in hemorrhage, thrombosis and tissue necrosis. Such lesions undergo repair—in the skin by formation and separation of an eschar, in the joints by productive inflamma-

tion that may remain active for twenty-seven days or longer. These animals may also have areas of necrosis and thrombosis of blood vessels in the heart, the lungs and the liver.

KAUFFMANN, F. (1947.) **On the serology of the salmonella group.**—*Acta path. microbiol. scand.* **24.** 242–250. [In English.] **34**

K. presents a revised simplified scheme for the diagnosis of the *Salmonella* group of organisms (Kauffmann-White scheme). The diagnostically important antigens are entered in two columns: O and H antigens, the H antigens being again divided into phase 1 and phase 2 antigens. Information is given concerning the new rearrangement of the scheme.—E. KLIENEBERGER-NOBEL.

RANTA, L. E., & DOLMAN, C. E. (1947.) **Experience with salmonella typing in Canada.**—*Canad. J. publ. Hlth.* **38.** 286–294. [Authors' summary copied *verbatim.*] **35**

Hitherto, 28 Salmonella types have been reported in Canada. Included among these were the first isolations in North America of *S. brandenburg, potsdam* and *moscow.*

During a period of 27 months ending March 31st, 1947, 317 cultures were identified as members of the genus *Salmonella* at the Canadian Salmonella Typing Centre. These were classified into 21 types, including *S. nyborg, cambridge* and *sundsvall* recorded for the first time in North America, while *S. oregon, new brunswick, miami, madelia, worthington,* and *urbana* had not previously been reported in Canada. A total of 37 types have therefore to date been identified and reported in Canada.

The pathogenicity for man of *S. madelia* and *S. cambridge* is reported, the former having caused the fatal illness of an infant.

CROSSLEY, V., FERGUSON, M., IRVINE, P., & HASTINGS, M. (1948.) **Salmonella typing in Ontario and the use of polyvalent antisera.**—*Canad. J. publ. Hlth.* **39.** 192–199. [Authors' summary copied *verbatim.*] **36**

Salmonella typing by the Kauffmann-White scheme has been carried out at these laboratories since 1935. In that time 27 different types have been identified. In 1945, 8 polyvalent *Salmonella* sera were prepared following a modification of Kauffmann's procedure. All cultures suspected of being species of salmonella are screened through these polyvalent sera, which permits an early preliminary report of *Salmonella* isolations. This is followed later by a final identification when an antigenic analysis has been completed.

MINGLE, C. K. (1947.) **Research in the field of bovine brucellosis.**—*Iowa Vet.* **18.** 7–11, 26, 28, 30, 32. **37**

A useful review of conclusions arrived at especially in regard to strain 19. Short descriptions are given of various laboratory and field experiments which support these conclusions.

—S. J. GILBERT.

HESS, E. (1943.) Die Brucellose des Pferdes. **[Equine brucellosis.]**—*Festschrift Oskar Bürgi,* 1943. pp. 158–163. Horgen-Zürich: Fritz Frei. [In German.] **38**

A conventional article.—K. A. ALLEN.

EVANS, A. C. (1947.) **Brucellosis in the United States.**—*Amer. J. publ. Hlth.* **37.** 139–151. **39**

E. describes the origin of brucellosis in the U.S.A., the relationships between the different types of brucella and the investigations which led to an understanding of these types. The infection of human beings and animals with the various types is discussed. Cattle may be secondary hosts of *Br. suis* and *Br. melitensis.* An estimation is made from various reports of the prevalence of brucellosis in man and animals in the U.S.A.

Br. melitensis infection of sheep in the U.S.A. has been reported. The occurrence and the significance of chronic brucellosis are also discussed.—S. J. GILBERT.

LIDDO, S. (1940.) Sul presunto neurotropismo brucellare. (Ricerche sperimentali.) **[On the possible existence of neurotropic brucella strains.]**—*G. Batt. Immun.* **24.** 640–648. [English, French & German summaries.] **40**

The hypothesis that neurotropic brucella strains exist in nature and are responsible for the brucella syndrome in man now designated "neurobrucellosis" is an attractive one but is not supported by adequate experimental evidence.

—K. J. SINCLAIR.

BASSET, J. (1947.) Tularémie. Épizootie récemment identifiée en France chez le lièvre. **[Tularaemia. Epizootic disease recently identified in France in hares.]**—*Bull. Acad. vét. Fr.* **20.** 164–166. **41**

Observations on an outbreak of tularaemia in hares in the region of Doubs. The infection appears to have been conveyed by hares imported from Hungary.—S. J. GILBERT.

BASSET, J. (1947.) Brucellose de lièvre. **[Brucellosis in hares.]**—*Bull. Acad. vét. Fr.* **20.** 167–172. **42**

Following an outbreak of tularaemia in hares which had recently been discovered in France, B. compares the syndrome in hares infected with *Br. tularensis* and *Pasteurella pseudotuberculosis* and the methods of differential diagnosis.—S. J. G.

WHITLOCK, J. H., & FABRICANT, J. (1947.) **The use of *Clostridium welchii* type D anaculture in the prevention of overeating disease (entero-**

toxemia) in sheep.—*Cornell Vet.* **37.** 211–230. **43**

From a review of the literature (77 refs.) overeating disease was found to bear a close relationship to braxy and pulpy kidney disease. These diseases occur in sheep of all ages, and are associated with overfeeding on concentrates, lush pasture, or sudden change of pasture. Incidence is highest in sheep which are in good condition; onset is sudden, and death follows quickly. Symptoms are glycosuria, opisthotonos, staggering, circling, convulsions, coma, and paralysis. P.M. examination reveals subserous and intramuscular haemorrhages, transudate in the pericardium, congestion of the abomasum and small intestine, and pulpy kidney. *Cl. welchii*, type D, or its toxins can usually be demonstrated.

5 ml. doses of a *Cl. welchii*, type D anaculture were used to vaccinate 8,461 feeder lambs, leaving an equal number of controls. During the second and third months after vaccination, deaths in the control group were significantly higher than those in the vaccinated group (109 : 73), but the authors conclude that the vaccine as used is not a practical preventative of the disease. They suggest that a more potent vaccine might be satisfactory.

—G. B. S. HEATH.

SMITH, H. (1948.) **Coccidioidomycosis in animals with report of a new case in a dog.**—*Amer. J. Path.* 24. 223–233. **44**

In a review of the disease known as coccidioidomycosis, or coccidioidal granuloma, it is pointed out that the great majority of cases has been recorded in the south-western states of the U.S.A., there being reason to believe that spores inhaled with dust are responsible for the endemic status in that area. The causative fungus may be capable of propagating itself on a native plant, but some evidence incriminates rodents as reservoir hosts.

In animals other than man only the granulomatous type of the infection has been recognized, characterized by widely disseminated foci of specific granulation tissue around the causative organisms, and having clinically and pathologically a close resemblance to tuberculosis. After a short description of the causative organism, it is pointed out that amongst domestic animals infection has been principally found in cattle, all cases being from the south-western states. In cattle the lesions have been limited to the bronchial and mediastinal lymph nodes, and in a minority of instances to small nodules in the lungs, and have been described as "large areas of suppuration or several smaller purulent foci, all of which are usually surrounded by granulation tissue and a fibrous capsule". In describing the histopathological characters of these lesions in cattle, it has been stated that "in some fields the inflammatory reaction resembled that of tuberculosis, and only the presence of spherical bodies within giant cells enabled a differentiation from a tuberculous process". In several bovine cases a halo of eosinophilic radiating clubs, surrounding some of the *Coccidioides* spherules has been described, comparable to the rosettes of actinomycosis and actinobacillosis. One case has been detected in sheep, and two cases have been previously recorded in dogs.

S. describes infection in a dog in Iowa which had previously lived in Texas. The symptoms were principally attributable to nephritis. The animal was treated for two weeks, a course of penicillin being included, but the white cell count rose to 25,000, and haematuria and evidence of irritation of the urinary tract developed. The dog was killed painlessly by electrocution. Severe chronic purulent nephritis was revealed P.M., but there were sharply defined, irregular, white nodules in the liver and lungs about 1–5 cm. in diameter, and there was one nodule in the spleen. No pus or other material could be squeezed from the cut surface of the nodules. Microscopically the nodules were found to be granulomatous in nature, the predominant cells being of the reticulo-endothelial type, lymphocytes and polymorphonuclear leucocytes also being present. No giant cells occurred, nor was there evidence of necrosis or calcification.

Occasional spherules of one stage or another of *C. immitis* occurred, the commonest forms being simple spheres with a refractile double contoured wall and amorphous contents. More rarely spherules were found with formed endospores. At what is interpreted as a later stage, the outer cell wall had disappeared and the endospores were beginning to scatter. A still later stage was represented by clumps of spherules, but as the larger forms were usually single it is surmised that the young spherules suffer considerable mortality.

Discussing the route of infection, the fact that the more extensive involvement of the liver, and the tendency for the hepatic lesions to be located around large blood vessels and ducts, points as much towards entry through the portal circulation as through the general arterial system, but the single splenic nodule indicated some access to the general arterial circulation.

The geographical distribution of the disease is discussed, and it is suggested that this case may have arisen in Iowa, or that infection may have been acquired during the stay in Texas, but the case of canine infection previously reported by PLUMMER [*V. B.* **12.** 335] in Quebec Province of Canada is more difficult to connect with known centres of coccidioidomycosis.—U. F. R.

KÄMPE, Å. (1944.) Om aktinomykos hos nötkreatur. **[Actinomycosis in cattle.]**—*Skand. VetTidskr.* **34.** 65–104. [English summary.] **45**

A general review. Six cases of actinomycosis of the maxilla were due to *Actinomyces wolff-israel.* In four cases affecting the pharynx and one case with pulmonary lesions the causal organism was *Actinobacillus lignieresi.* Four cases with udder lesions were due to staphylococci. In all cases cultures were made.—F. E. W.

NOBREGA, P., & BUENO, R. C. (1946.) Sobre a ação da penicilina na espiroquetose de pintos e aves adultas. **[Penicillin in the treatment of spirochaetosis of fowls and chicks.]**—*Arq. Inst. biol., S. Paulo.* **17.** 199–204. [English summary.] **46**

Adult fowls, artificially infected with spirochaetes, were cured by the intramuscular injection of 5,000 Oxford units of penicillin per kg. body weight, given three days after infection.

Doses of 20,000 Oxford units given 24 and 48 hours after infection to chicks infected in their third day of life, did not always cure. Although the incubation period was increased, the spirochaetes persisted in the blood of the majority of the birds, and recurrence was observed in some. This was said to be due to lack of the adjuvant action of antibodies, which are not formed in the very young chick.

Further tests on 35-days-old fowls showed that when penicillin was given at any time up to the fourth day after infection (tests were not made later than this), it had a clear-cut spiricidal action, and as its effect wore off, antibodies came into action to complete the cure. Recovered birds were immune to artificial re-infection seven days later.—I. W. JENNINGS.

BROTSKAYA, S. Z. (1945.) **[Thermophilic proteolytic bacteria. 1. Inactivation of proteolytic activity.]**—*Mikrobiologiya, Moscow.* **14.** 45–49. [English summary.] **47**

The proteolytic activity of thermophilic proteolytic bacteria is unstable. After a short period of cultivation on solid or semi-solid media they lose their ability to liquefy gelatin but after cultivation in meat peptone broth this is restored.

The changes are hereditary, but reversible, and are specific for thermophilic but not for mesophilic proteolytic bacteria. The properties of the agar-agar or gelatin used may have an influence on the results of such tests.—K. A. A.

BRAUN, W. (1947.) **Bacterial dissociation. A critical review of a phenomenon of bacterial variation.**—*Bact. Rev.* **11.** 75–114. **48**

B. points out that the usual way of producing dissociation is by culturing bacteria for prolonged periods in liquid media with or without enhancing substances, followed by plating and picking out of aberrant colonies. The various forms of colony variations are then discussed, such as S–R, R–M and others, which constitute what are generally regarded as dissociations. The concepts leading to variation, such as mutation and selection, adaptation, "Dauermodifikationen," life-cycles are reviewed. The author is of the opinion that the frequent absence of orderly succession of culture phases and the occurrence of independent changes of characteristics rules out the life cycle concept as explanation for the variations, while the evidence of the lack of correlation between specific conditions and the specific changes rules out adaptation as an explanation. In contrast to this, recent observations on X-ray treated cells and on cells under the influence of certain chemicals have shown that undirected mutations followed up by selection occur in bacteria. Inherent and environmental factors controlling mutation are discussed; the problem of reverse mutations and of apparent cycles is reviewed, as well as the phenomenon of the presence and absence of linked variation. Finally relation of dissociations to some basic and applied problems, such as taxonomy and epidemic waves or the assay of penicillins is discussed.—E. K.-N.

See also absts. **137** and **138** (antibiotics); **149** (ruminal flora); **157** (T.B. and meat inspection); **159** (bacteria in dehydrated foods); **171-174** (technique).

DISEASES CAUSED BY PROTOZOAN PARASITES

GOLASZEWSKI, F. (1947.) Zur Bekämpfung der Beschälseuche. **[Control of dourine.]**—*Wien. tierärztl. Mschr.* **34.** 166–167. **49**

G. considers that to eradicate dourine from Austria, service should only be allowed at controlled breeding stations. It is claimed that stallions treated with neosalvarsan can afterwards be safely used.—U. F. RICHARDSON.

LHOVEROL, H., & PHILIPPE, L. (1947.) Notes morphologiques sur *Trypanosoma suis* ochmann. Variations du polymorphisme au cours de l'infection. **[The morphology of *Trypanosoma simiae.*]**—*Rev. Elev. Méd. vét. Pays trop.* **1.** 17–28. **50**

From a study of *T. simiae* in natural and experimental infections in pigs it is concluded that at the start of an infection, and immediately after a relapse, trypanosomes of the *congolense* type are always present, and forms with a free flagellum rare. As the disease progresses the *congolense* forms decrease in numbers whilst the *rodhaini* forms and *simiae* forms with a free flagellum

increase. After the 4th or 5th day only *simiae* and *rodhaini* types are present and a large proportion of the organisms are flagellated. It seems that when rapid multiplication is occurring the long types predominate. Attention is drawn to the fact that different measurements have been given by different authors; this may be due to examination at different stages of the infection.

The method of multiplication by division is also discussed, and it is suggested that the flagellum appears to split, rather than that a new flagellum grows out from one of the centrosomes as has been described.—U. F. RICHARDSON

CECCALDI, J., TRINQUIER, E., POCHARD, P., & VARGUES, R. (1947.) Résultats du traitement de la trypanosomiase humaine par le composé 70A ou para-arséno. **[Treatment of human trypanosomiasis with compound 70A or para-arseno.]**—*Bull. Soc. Path. exot.* **40.** 439–444. **51**

From tests of the value of p-arsenophenyl butyric acid on 42 cases of human trypanosomiasis it was found to have trypanocidal properties, but even in early cases is less reliable than tryparsamide, and has no value when the nervous system is affected.—U. F. RICHARDSON.

PAVLOV, P. (1947.) Recherches sur la leishmaniose du chien. **[Leishmania infection in dogs.]**—*Bull. Soc. Path. exot.* **40.** 258–263. **52**

Out of 60 dogs examined in various areas of Greece, 25 gave positive formol-gel tests. Of these 25 animals, four had clinical signs, bone marrow smears revealed infection in seven cases, spleen smears in four cases, and N.N.N. cultures in seven cases. It is concluded that the formol-gel test is inaccurate, and the most reliable methods of demonstrating infection are bone marrow examination and culture in N.N.N. medium.—U. F. RICHARDSON.

SHORTT, H. E. (1947.) **The diagnosis of kala azar.**—*Trop. Dis. Bull.* **44.** 145–150. **53**

It is pointed out that human visceral leishmaniasis, once looked upon as a disease of the tropics, is now known to occur in all the continents except Australia, and the danger of introduction into countries where the disease does not normally occur, and cannot spread, has been exaggerated as a result of the war.

In suspected cases, as the incubation period may be prolonged, any previous residence in an endemic area increases suspicion. The clinical features are long-continued fever, enlargement of the spleen and liver, increasing anaemia and emaciation, loss of hair, leucopenia and abdominal protrusion.

Laboratory investigations recommended include the formol-gel test, which is said to be reliable in developed cases; microscopic examination of peripheral blood, which is said to give 70–80% of positive results in proved cases of Indian kala azar, the organisms occurring in large monocytes, or more rarely in the polymorphonuclears; culture of peripheral blood in N.N.N. medium at 22°–24°C., which in untreated cases of Indian kala azar gives positive results in over 90% of cases; liver and spleen puncture; sternal puncture which only has a value over other methods in P.M. examinations, as organisms in bone marrow are not disintegrated so quickly by decomposition; puncture of the lower group of superficial inguinal glands, which has been recommended as reliable in the Anglo-Egyptian Sudan area; and the complement-fixation test, which has been rendered satisfactory by the introduction of an antigen prepared from the human tubercle bacillus. The latter test gave 97% positive reactions in otherwise proved cases of kala azar, and negative reactions in a large number of controls. Antigens prepared from *Mycobact. phlei* and the leprosy bacillus have also been promising.—U. F. RICHARDSON.

KERR, W. R., & ROBERTSON, M. (1947.) **A study of the re-exposure to *Tr. foetus* of animals already exposed to the infection as virgin heifers, with some observations on the localization of antibody in the genital tract.**—*J. comp. Path.* **57.** 301–313. **54**

Seven cows which had been exposed to *Trichomonas foetus* infection in 1944–45 were re-exposed to infection at times varying from 6–21 months after the first exposure. Three animals which failed to take on the first occasion all developed infections on the second occasion. Three animals which had had acute infections at the first exposure all resisted the second exposure and calved to term, but this did not prevent infection after the normal pregnancy. The seventh animal had harboured trichomonads in the uterus for at least seven months after the first exposure, but calved normally. Exposure to infection with a different trichomonad strain a year later resulted in a re-infection. The use of two strains of trichomonads renders the interpretation of results rather complicated, and those interested should consult the original paper.

It is noted that in one animal, in which a relatively small number of trichomonads were introduced, conception appeared to be prevented without the organisms being sufficiently numerous to be observed by direct examination. Trichomonads survived in this animal for at least 67 days, through two oestrous cycles. The fact that the uterus was normal in three animals which failed to conceive suggests that persisting tricho-

monads may often account for sterility. It is concluded that while previous acute infection gives some protection, its duration is relatively short, and does not seem to persist beyond normal pregnancy.

An account of experimental work on the examination of uterine and vaginal mucins is also included; antibody was found in one animal in both the uterus and vagina, in one animal in the uterine wash only, and in one animal in the vaginal wash only. It is suggested that the occurrence of immune body in the uterus may be associated with protection against re-exposure, and the immune body in the vaginal mucin with the gradual disappearance of *T. foetus* from those animals in which the organism persists after the return of oestrus.—U. F. RICHARDSON.

COLE, B. A. (1947.) **The *in vitro* effects of penicillin on the growth of *Trichomonas foetus*.**—*J. Parasit.* **33.** 405–411. **55**

The purpose of this experiment was to investigate the inhibitory effect of penicillin on the growth of *Tr. foetus*. A detailed description is given of the methods used.

C. found that it required from 1,000–2,500 units per ml. to inhibit growth using manufacturers' samples, whereas with pure crystalline penicillin, 10,000–20,000 units per ml. were required to inhibit growth. Some factor other than penicillin was also present which had an inhibitory effect on *Tr. foetus*.

[Penicillin is a very useful agent when added at the rate of 500 units per ml. to a fluid culture medium in isolating *Tr. foetus* from contaminated vaginal discharges.]—W. R. KERR.

CANTRELL, W., & JORDAN, H. B. (1946.) **Changes in the infectiousness of gametocytes during the course of *Plasmodium gallinaceum* infections.**—*J. infect. Dis.* **78.** 153–159. **56**

The infectivity of the blood of fowls infected with *Pl. gallinaceum* for mosquitoes reaches a peak one day before the peak of the parasitaemia. The size of the oocysts as well as their number was affected by the intensity of the infection in the blood of the fowl.—M. C.

TALIAFERRO, W. H., TALIAFERRO, L. G., & SIMMONS, E. L. (1945.) **Increased parasitemia in chicken malaria (*Plasmodium gallinaceum* and *Plasmodium lophurae*) following X-irradiation.**—*J. infect. Dis.* **77.** 158–176. **57**

Infected chickens were treated with X-rays at intervals beginning on the day of infection.

Parasitaemia was increased. The effectiveness of a given dose of X-rays varied with the age and susceptibility of the fowls, the species of parasite, the period of the infection and its intensity. The relation of the results obtained to immunity is discussed.—M. C.

DONATIEN, A., & RAMPON, L. (1947.) Influence des piroplasmoses bovines sur la production laitière en Algérie. **[Effect of bovine piroplasmosis on milk production in Algeria.]**—*Arch. Inst. Pasteur Algér.* **25.** 101–106. **58**

Piroplasmosis and anaplasmosis in dairy cattle cause heavy losses by decreasing milk production. To prevent such losses early treatment is necessary. The regular use of the thermometer is advised to enable cases to be detected and treated at an early stage. Formalin is said to be useful in treatment of theileriasis but no details of the dosage or route of administration are given. No efficacious treatment is available for anaplasmosis. Gonacrine [acriflavine] and zothelone [acaprin] are used with good results in piroplasmosis.

Vaccines for prevention of these diseases have been studied during the past 20 years and although they may be used with safety on the native cattle they may cause serious loss in imported or cross-bred dairy cows, the only exception being the anaplasmosis vaccine. Tick dips are not in use in Algeria, they are considered to be too dangerous for milch cattle.—M. C.

KHAYYAT, S. M., & GILDER, A. A. (1947.) **Ovine piroplasmoses in Iraq.**—*Trans. R. Soc. trop. Med. Hyg.* **41.** 119–126. **59**

Outbreaks of disease in sheep in Iraq during 1943–44 are ascribed in one case to *Theileria hirci*, possibly complicated by *Senecio* poisoning, in one case to a mixed infection of *Th. hirci* and *Babesia motasi*, in one case to a pure *B. motasi* infection, in one case to infection with *Anaplasma ovis*, and in one case to a mixed infection with *A. ovis* and *B. motasi*. A trypanosome, believed to be *T. melophagium* was also encountered.

Ticks collected from the areas concerned were identified as *Hyalomma dromedarii*, *Rhipicephalus sanguineus* and *Haemaphysalis cinnabarina punctata*.

A description of the symptoms and pathological findings is given, it being noted that no enlargement of the spleen occurred in the outbreak associated with *B. motasi*, and that epistaxis was a prominent symptom in the outbreak associated with a mixed infection with *B. motasi* and *Th. hirci*.

In the *B. motasi* outbreak sick animals responded to treatment with trypanblue, but in the mixed infection with *B. motasi* and *Th. hirci* they did not.

No description of the morphology of the parasites is given, but it is noted that theilerial schizonts were encountered in the blood, as well as in the lymph nodes, liver and spleen.

Notes are also included on the species of *Senecio* occurring in Iraq.—U. F. RICHARDSON.

PAVLOV, P., & PASCHEV, I. (1946.) Recherches sur la piroplasmose du porc en Bulgarie. **[Piroplasmosis in swine in Bulgaria.]**—*Ann. Parasit. hum. comp.* **21.** 235–240. **60**

The occurrence of piroplasmosis in swine is recorded from three places in Bulgaria. The disease was of the chronic, benign type, haemoglobinuria being absent. The causal organism resembled *B. trautmanni.* The infected herd was kept under good conditions, and no ticks were found. It is tentatively suggested that transmission might be by argasidae.—U. F. R.

See also abst. **166** (trypanosomes in camels).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

DE MELLO, F. P. (1946.) La fièvre aphteuse au Portugal. **[Foot and mouth disease in Portugal.]**—*Bull. Off. internat. Epiz.* **26.** October. 63–66. **61**

After a freedom of five years, F. & M. disease appeared in Portugal, on the Spanish frontier, in 1944 and persisted till 1946. The disease was of a mild type, spreading more rapidly in summer than in winter, and affected cattle, sheep, pigs and goats. Control was effected by segregation and vigorous measures of disinfection. A recently strengthened virology service provisionally identified the infection as being due to C type virus, as in Spain.—U. F. RICHARDSON.

REMLINGER, P. (1945.) Les insuccès du traitement antirabiques. **[Unsuccessful results from antirabic treatment.]**—*Arch. Inst. Pasteur Algér.* **23.** 269–276. **62**

Discussing the value of anti-rabies treatment it is pointed out that 3,540 deaths occurred amongst the 1,062,807 persons treated between 1928 and 1937. Figures are given for certain areas of China, the Balkans and French Colonies from 1937 onwards showing 136 deaths out of 54,835 persons treated. It is, however, admitted that some deaths escape being recorded, although it is also pointed out that some of these recorded deaths occur within a fortnight of treatment, before vaccination could give protection. It is also pointed out that antirabic treatment has been shown to be ineffective if the incubation period of the rabies is less than 30 days from the bite, and that in untreated cases, the mortality during that time is equal to one-fifth of the total deaths.

Discussing strains of the virus, it is claimed that experiments on cross-immunity between strains have always shown them to be immunologically identical. Strains have been encountered with increased virulence for rabbits, but they show no special virulence for g. pigs, nor, it is thought, for man. The virus from wolves does show a special virulence for man, but the majority of failures in anti-rabies treatment occurs, not with virulent strains, but in people bitten by suspect animals in which rabies has not actually been demonstrated.

Criticizing the finding of WEBSTER [*V. B.* **16.** 261] that no vaccine was effective after infection, it is argued that Swiss mice, with which Webster was working, were not suitable experimental animals, as in this animal the virus, inoculated subcutaneously, does not travel to the central nervous system by the peripheral nerves.

Although R. restates his faith in Pasteurian anti-rabies treatment, he suggests the advisability of a world conference in view of the complexity of the problems involved.—U. F. RICHARDSON.

NOVICKÝ, R. (1947.) Příspěvek k studiu paralytické formy vztekliny u skotu v Jižní Americe. Fixace viru v telatech a výroba vakciny. **[Paralytic rabies in cattle occurring in South America. The fixation of the virus in calves and the production of a vaccine.]**—*Čas. československ. Vet.* **2.** 301–327. [English, Russian and Spanish summaries. Abst. from English summary. Extensive bibliography.] **63**

Paralytic rabies, identified in Brazil in 1911, has spread over the S. American continent; transmission is by blood-sucking bats. The causal agent is a neurotropic virus resembling that of canine rabies, but possessing certain biological and immunological characters attributable to continuous passage of the virus in bats.

An official campaign against paralytic rabies was organized in Venezuela in 1938, vaccine production starting in 1939. Conclusions from artificial transmission experiments are: (1) Cattle and goats are very susceptible to the virus, (2) Pigs and dogs are very resistant, (3) Transmission of the virus to large animals is certain only by the intracerebral route, (5) The incubation period in inoculated calves was 8–39 days, (6) The presence of the virus in the blood of one affected cow was demonstrated, (7) Virus was present in the saliva of sick calves, but it could not be detected in glands or brain tissue of foetuses from cows that had died of paralytic rabies, (8) Virus-infected ticks were not found on the sick animals.

Any initial aggressiveness in inoculated calves abated with the onset of paralysis, which occurred sometimes one hour after the first symptoms of the disease (irritation, salivation). The disease lasted 3–6 days but most animals died at the end of the fourth day.

The same results were observed P.M. as in

canine rabies except that foreign bodies were absent from the stomach. Negri bodies were present in the brains of 70% of the animals and they were small. Diagnosis can be reached in 8–12 days if white mice are used (14–22 days in rabbits and g. pigs).

Vaccines were obtained from calves 6–9 months old inoculated intracerebrally by frontal drilling of the skull. The virus used was a local paralytic rabies virus from the Bolivar State fixed in calves by a number of continuous intracerebral passages. The incubation period of the first passage was up to 18 days, decreasing to seven days in the fourth passage, six days in the 12th–52nd passages, and five days up to the 275th passage. As the number of passages increased, paralysis, quickly spreading over the whole body, became the first symptom of the disease. Salivation, a notable feature of the first passage, soon disappeared. The duration of the disease shortened to about 24 hours in the 12th passage. Negri bodies found up to the 3rd passage disappeared entirely after the seventh passage. Virulence increased with the number of passages. After the 2nd passage the virus was lethal for calves when diluted 1 : 1,000. The "Bolivar" virus began to show the characters of a fixed virus after the 12th passage.

A second strain of paralytic rabies virus, fixed in calves, was isolated in a region where the disease was diagnosed in 1938. It is called the "Maturin" virus. The incubation period in the first two passages was 10 and 11 days, falling to seven days in the seventh passage and to six days in the 14th passage, remaining at six days up to the 252nd passage. After the 12th passage the duration of the disease was only two days. Negri bodies disappeared after the fifth passage. The Maturin virus was still infective at 1 : 4,000 dilution after second passage and 1 : 5,000 after 63rd passage.

Production of anti-rabies vaccine was begun when the Bolivar virus showed signs of being fixed. The brains and spinal cords of diseased calves were coarsely minced and mixed with an equal amount of physiological saline containing 2% phenol. The suspension was ground up in a colloid mill and then attenuated for 6–24 hours at 37°C. and for two days at room temperature. The vaccine was then further diluted with saline containing 1% phenol so that the final product was a 15% emulsion of the nerve tissue. The vaccine was tested and released.

The antigenic properties of the vaccine were tested by Habel's mouse test, the Bolivar fixed-virus being used as standard. The protection conferred by the Venezuelan vaccines was higher than that required for a standard vaccine in the U.S.A. and higher than that of a vaccine containing Pasteur fixed virus. The Bolivar vaccine can be stored for six months. The disease is now under control in Venezuela.

[Contains a good bibliography.]—K. J. S.

DE MELLO, F. P. (1946.) La rage au Portugal. **[Rabies in Portugal.]**—*Bull. Off. internat. Epiz.* **26.** October. 100–103. **64**

In 1926 4,600 persons had to undergo anti-rabies treatment in Portugal, but with the introduction of the vaccination of dogs, the number had dropped to 350 in 1934. With the dropping of the vaccination measures rabies again increased, and 78 canine cases occurred in 1938. In 1939 a new drive for the vaccination of dogs was inaugurated, and by 1945 a total of 247,135 animals had been treated, and the number of cases of canine rabies dropped to seven. For vaccination both live and killed vaccines were used. The few cases of canine rabies which were still occurring in 1946 were located near the Spanish border, and were believed to be due to stray dogs.

—U. F. RICHARDSON.

DELPY, L. P., & RAFYI, A. (1947.) Recherches expérimentales sur le virus claveleux. Méthode d'immunisation employé en Iran. **[Sheep pox, methods of immunization in Iran.]**—*Bull. Acad. vét. Fr.* **20.** 347–353. **65**

Difficulty was encountered in Persia in immunizing the local fat-tailed sheep against sheep pox, as it was found impossible to adapt the virus to hypodermic transmission. Experimental work using local and imported sheep, showed that failure in adaptation was due to the resistance of the local sheep, and was not an inherent peculiarity of the local virus. The difficulty was overcome by the use of three strains of imported sheep-pox vaccine which have been found to retain their power of producing subcutaneous inflammatory swellings in local sheep for four or five passages. The vaccine material collected from these swellings can be kept on ice for about a month. For vaccination a dose of 0·2 ml. of a 1 : 200 dilution is used, but this must be used within two months of issue.—U. F. RICHARDSON.

STUART-HARRIS, C. H., & MILLER, M. H. (1947.) **Vagaries of the agglutination-inhibition reaction with newly-isolated strains of influenza virus.** —*Brit. J. exp. Path.* **28.** 394–403. **66**

Study of four strains of influenza virus and sera of patients infected with influenza in 1947 showed certain peculiarities. Sera from many cases when tested with influenza A virus (P.R.8) gave a better antibody response than when tested with virus recovered from the actual outbreak.

Mouse-neutralization tests with one of the recently isolated strains suggested a definite relationship to P.R.8 virus and that the neutralizing antibody content of human convalescent sera was

not closely related to the inhibitory action of the serum on the virus *in vitro*.—F. D. ASPLIN.

SMITH, M. G., BLATTNER, R. J., & HEYS, F. M. (1947.) **St. Louis encephalitis. Transmission of virus to chickens by infected mites *Dermanyssus gallinae* and resulting viremia as source of virus for infection of mites.**—*J. exp. Med.* **86.** 229–237. [Authors' summary copied *verbatim*.] **67**

Transmission of the virus of St. Louis encephalitis to normal chickens by the bite of infected mites (*Dermanyssus gallinae*) has been demonstrated. Both experimentally infected and naturally infected mites were shown to be capable of transferring the virus of St. Louis encephalitis to chickens by bite. Virus is present in the blood of such chickens in small amounts, so that demonstration of viremia was possible only by utilizing chorioallantoic passage in hens' eggs. However, there is sufficient virus present in the blood for uninfected chicken mites to acquire the virus by feeding on chickens in which viremia has resulted from previous bite of infected mites. Thus it has been shown that the arachnid vector *Dermanyssus gallinae* is capable of transmitting the virus of St. Louis encephalitis to normal chickens by bite and that such chickens can serve as a source of virus for uninfected mites.

SCHMIDT, E. C. H. (1948.) **Virus myocarditis. Pathologic and experimental studies.**—*Amer. J. Path.* **24.** 97–117. **68**

From a chimpanzee dying of acute myocarditis S. isolated a virus by the intravenous inoculation of mice with chest fluid and spleen suspension. All the mice died following paralysis of the hind quarters. The virus was passaged ten times through mice before it lost its virulence. The disease in mice followed a characteristic course with paralysis on the fourth or fifth day and death on the seventh to the tenth day.

Both g. pigs and hamsters were susceptible to the virus, while rabbits and rats proved refractory. The nature of the infecting agent was proved by passage through Seitz and Berkefeld filters without loss of potency. No immunological relationship was found between this virus when tested, against any of 15 other known viruses.—D. LUKE.

AZZI, A. (1942.) Infravirus e infravirus-simili. **[Filtrable viruses and allied infective agents.]** —*G. Batt. Immun.* **28.** 54–96. **69**

The diseases caused by these agents are classified as general febrile diseases (pustular, vesicular, exanthematous and septicaemic), diseases with special localization (respiratory system, nervous system and other organs), diseases due to virus-like agents (rickettsiases, bartonellosis, psittacosis and bovine contagious pleuro-pneumonia), diseases whose aetiology is still in dispute (including agalactia contagiosa, equine abortion, strangles, infectious catarrh of cattle, coryza of fowls, and pleuro-pneumonia of goats), viruses of tumours and viruses of fishes, insects, plants and bacteria.

Detailed descriptions are given of the methods used for the microscopic observations of elementary and inclusion bodies, the measurement of size of virus particles, cultural methods, the determining of the powers of resistance and adsorbability, the determining of the identity of viruses and their differentiation, and the study of epidemiology, immunity and immunization. The author gives no account of original work.—

—U. F. RICHARDSON.

ROGERS, A. C. (1947.) **The treatment of equine influenza.**—*Vet. Med.* **42.** 363–366. **70**

The Terminal Stockyard Company co-operated with U.N.R.R.A. in a large-scale livestock collecting and shipping programme, and for many months had several thousand horses and mules in their yard awaiting shipment to Europe. It was found that approximately one-third of these animals would require medical attention upon arrival. The cases of equine influenza, usually complicated by secondary invaders, were chiefly caused by a lack of immunity to the disease, many animals having come direct from farms where they had not been previously exposed to infection; pre-clinical cases which had escaped detection before loading had been a source of infection for other animals in transport; and the conditions of transport, many having travelled in open trucks exposed to bad weather for several days, closely packed nose to nose. On arrival affected animals were isolated. First, 30 ml. of metrazol [pentamethylenetetrazol] were given intravenously as a stimulant, followed by 20 ml. several hours later. One gr. of sodium sulphamethazine per lb. body weight was injected intravenously and 1·5 gr. per lb. body weight given *per os* on the first day. On the second and third days a single oral dose of 0·5 gr. per lb. was given. These small doses maintained a good blood concentration of the drug throughout the 24 hours. Animals scouring were given an astringent mixture by stomach tube. Strangles also occurred as a complication, and was treated by sulphonamides and iodides and, where necessary, tracheotomy. Purpura haemorrhagica was treated with daily subcutaneous injections of 10 ml. of a 1 : 1,000 adrenalin solution. By this procedure the death rate was reduced to 2%.

—J. O. L. KING.

ANON. (1945.) **[The prevention and treatment of rinderpest. Report of the Chinese National Research Bureau.]**—*Chin. J. Anim. Indust.* **3.** 90–92. **71**

During 1941–42, a total of 9,842 cattle were immunized against rinderpest with vaccine and/or serum under the supervision of the Bureau.
—S. J. Chu.

Jacotot, H. (1947.) Effets résultant de l'adjonction de gel d'alumine au vaccin contre la peste bovine. **[The effects of addition of aluminium gel to formolized rinderpest vaccine.]**—*Rev. Élev. Méd. vét. Pays trop.* **1.** 267–271. **72**

This is a résumé of work done in Indo-China between 1940–45 on the use of a formolized rinderpest tissue vaccine to which aluminium hydroxide had been added. The addition of aluminium hydroxide markedly increases the potency of the vaccine so that much smaller doses may be used with resulting economy and it greatly prolongs the period during which the vaccine remains potent. Between 1940 and 1945, 55 million ml. of this vaccine have been prepared and used to vaccinate two million cattle.

The vaccine is made from lymph node, spleen and lung tissue. To the tissue pulp 60% by volume of an aluminium gel containing 5·5% of aluminium hydroxide is added. The final vaccine contains 20% of tissue pulp and 0·55% formalin.
—M. C.

Zavagli, V. (1946.) L'agalassia contagiosa delle pecore e delle capre—ricerche sperimentali. **[Contagious agalactia in sheep and goats—experimental research.]**—*Zooprofilassi.* **1.** No. 1. pp. 3–6; & No. 2–3. pp. 12–26. **73**

A review is given of the literature on this disease, and the symptoms, lesions and epidemiology are discussed. It is recorded that transmission by cohabitation has never occurred in the experimental flock of sheep at Rome.

It has been claimed that the incubation period may be prolonged, but Z. found that subcutaneous inoculation of virulent material produced classical udder symptoms within 5–7 days, and that sheep were 100% susceptible. Febrile reactions were not always marked. From subinoculation experiments it was found that the virus occurred in the blood from the 24th–36th hour after inoculation, but was absent at the 12th and 48th hours. It could be detected by the 24th hour. At the 48th hour the concentration was greatest in the udder, with decreasing quantity in the spleen, liver, brain and mammary lymph nodes, and none in the kidneys. On the fifth day the concentration in the udder, liver and brain was almost equal, with lower concentration in the spleen, pancreas and eyes. Attention is drawn to the predilection of the virus for tissues of ectodermic origin.—U. F. R.

Gresson, R. A. R., & Zlotnik, I. (1947.) **The Golgi material of the neurones of the central nervous system of sheep infected with louping-ill.**—*Quart. J. micr. Sci.* **88.** 55–63. **74**

Small pieces of cerebrum, cerebellum and medulla oblongata, and the cervical and thoracic regions of the spinal cord, were taken from two normal sheep and from three sheep affected with louping-ill. The material was prepared according to the methods of Aoyama and Da Fano. Microscopic examination and comparison of sections showed that in louping-ill the Golgi material underwent definite changes after the cells had been invaded by the virus. Hypertrophy, accompanied by a reduction in the number of filamentous Golgi elements and in the amount of Golgi substance in the cell process, was succeeded by fragmentation of the material. In the Purkinje cells and the motor neurones of the cord, grouping of the Golgi elements preceded fragmentation.—L. M. M.

Manninger, R. (1944.) Ansteckende Magen-Darmentzündung des Schweines und verwandte Krankheiten. **[Infectious gastro-enteritis of swine and allied diseases.]**—*Berl. Münch. tierärztl. Wschr./Wiem. tierärztl. Mschr.* June 23rd. 209–210. **75**

Infectious gastro-enteritis is caused by a virus which occurs in the body in demonstrable quantities only during the early stages of the disease. When the pseudo-membranous gastro-enteritis stage occurs, the virus disappears and that was the reason for the negative results of the first investigations into the cause. When material from the early stages was used, the disease could be transmitted serially with ease. A similar gastro-enteritis was described by Köbe [*V. B.* **14.** 201] who stated that it was the predisposing cause of erysipelothrix and fatal syncope. It is M.'s opinion that the latter is a virus disease and that the ultimate form of the disease may be due to other agents.

M. disagrees with Kobe's contention that there is always a relation between the virus and *Erysipelothrix rhusiopathiae.* He states that the susceptibility of pigs to erysipelothrix may be influenced by many factors, including the virus of infectious gastro-enteritis.

Infectious heart and skeletal muscle degeneration of lambs is also primarily a virus disease in which the virus can only be found in the early stages. This virus also causes an acute gastro-enteritis though once more the ultimate form of the disease may be due to other causes. Csontos & Derzsy [*V. B.* **17.** 266] made the same observations concerning an infectious disease of cattle.

M. concludes by stating that there is a group of diseases in pigs, sheep and cattle caused by host specific viruses and characterized by the same general symptoms, including gastro-enteritis. In many of these, degeneration of the striated muscle

is also present, and it is to be expected that similar diseases will be encountered in other animals. Muscular dystrophy of ducklings may also belong to this group even though a causative virus has not yet been demonstrated. Further research work is needed before control measures can be devised.—A. L. WILSON.

GLEESON, L. N. (1947.) **An account of infectious venereal granuloma in the greyhound.**—*Vet. Rec.* **59.** 411–413. **76**

G. states that in recent years the incidence, in Irish greyhounds, of infectious venereal granuloma has increased.

Transmission experiments with saline suspensions of tumour cells indicate that the incubation period varies between three and six weeks. A case of natural infection of a litter of puppies from an infected dam is noted.

The diagnosis and the surgical treatment of the disease are dealt with in detail. Complete extirpation of the lesion gave excellent results.

G. indicates measures for control.—A. R. J.

DONATIEN, A., & GAYOT, G. (1946.) Sur une épizootie localisée de peste aviaire en Algérie. **[An outbreak of fowl plague in Algeria.]**—*Arch. Inst. Pasteur., Algér.* **24.** 294–298. **77**

An outbreak of fowl pest affected a considerable proportion of the fowls around Algiers in 1946. The disease was apparently introduced by the importation of infected turkeys from Italy. The outbreak was diagnosed as fowl plague on the basis of clinical and pathological features. The symptoms and lesions recorded, however, resemble those of severe Newcastle disease which was not differentiated serologically. The disease was transmitted to sparrows by subcutaneous injection; ducks and pigeons were resistant. Attempts to immunize with formolized tissue suspensions were unsuccessful. The epizootic declined spontaneously within four months.—F. D. ASPLIN.

ZULINSKI, T. (1947.) Etat actuel des recherches sur la peste aviaire en Pologne. **[Fowl plague and Newcastle disease in Poland.]**—*Bull. Off. internat. Epiz.* **28.** May. 106–112. **78**

Fowl plague appeared in Poland in November, 1941. The disease described has the clinical and pathological features of Newcastle disease and has not yet been differentiated serologically from fowl plague. At the beginning of the epizootic the mortality was 95–97%, by 1945–46 it had fallen to about 70%. Vaccination with formolized tissue suspensions containing 1% aluminium hydroxide given in two injections at seven days' interval or as one double dose is being employed, the vaccination being repeated after six months if danger of infection persists. Vaccination with other control measures has resulted in a substantial decrease in the number of outbreaks.—F. D. ASPLIN.

ASPLIN, F. D. (1947.) **Newcastle disease in ducks and geese.**—*Vet. Rec.* **59.** 621–624. **79**

Ducks and geese are more resistant to infection than chickens.

In haemagglutination-inhibition tests with sera from ducks and geese which had been in contact with infected fowls it was found that an infection had taken place though the response in these species was not as regular nor were the titres as a whole as high as in chickens. The serum of a duck naturally exposed to infection contained a significant level of virus neutralising antibody.

Attempts to infect chick embryos with liver, spleen and bone marrow from these ducks were not successful. Ducks and a goose artificially infected all became infective for chickens after an incubation period of 3–4 days. The infective state persisted for 3–4 days only and there was no evidence that ducks and geese became carriers of infection.—D. LUKE.

LEVINE, P. P., & HOFSTAD, M. S. (1947.) **Attempts to control air-borne infectious bronchitis and Newcastle disease of fowls with sterilamps.**—*Cornell Vet.* **37.** 204–211. **80**

Lamps emitting ultra-violet light failed to prevent the spread of infectious bronchitis or Newcastle disease in poultry houses. The authors conclude that this style of lamp has little value in the control of respiratory infections of fowls under field conditions.—F. D. ASPLIN.

LEVINE, P. P., FABRICANT, J., & MITCHELL, G. B. (1947.) **Newcastle disease in ring-necked pheasants.**—*Cornell Vet.* **37.** 265–267. **81**

An outbreak of Newcastle disease was confirmed on a farm of 10,000 ring-necked pheasants. All groups of birds became infected and were slaughtered. It was estimated that mortality would have reached 50%. Symptoms were confined to the nervous system and included tremors, inco-ordination and paralysis. The origin of infection was obscure. An outbreak of Newcastle disease had occurred on the same premises six months earlier amongst 750 turkey poults, 600 of which had died. The surviving turkeys may have been the source of infection but the possibility of a second introduction of virus could not be disregarded.—F. D. ASPLIN.

BANG, F. B. (1947.) **Newcastle virus: conversion of spherical forms to filamentous forms.**—*Proc. Soc. exp. Biol., N.Y.* **64.** 135–137. **82**

Electronmicrographs of Newcastle disease virus in allantoic fluid show the virus to have a spherical shape. Most of the particles maintain this shape when purified by ultracentrifugation and transfer to water. Addition of 0·07–0·15 mol.

sodium chloride to the solution converts the particles to filamentous forms. This conversion can be prevented by partial inactivation with formalin, mustard gas or gentle heating.—F. D. A.

LABZOFFSKY, N. A. (1947.) **Ornithosis among "wild" pigeons in Ontario.**—*Canad. J. publ. Hlth.* **38.** 187–192. [Author's summary copied *verbatim.*] **83**

A survey of "wild" pigeons from three Ontario cities totalling 146 birds, was made to determine the existence of ornithosis infection. Four birds out of the total of 9 from city A, 1 out of the total of 43 from city B, and 19 out of a total of 94 from city C were found to be seropositive when tested with psittacosis antigens, employing rapid agglutination and complement-fixation techniques.

A viral agent morphologically and tinctorially identical with psittacosis virus was isolated from 58·3 per cent of the reactors. Cross-fixation and cross-immunity tests indicate that the strains of virus isolated are closely related to, if not identical with, the virus of psittacosis.

ST. JOHN, E., & GORDON, F. B. (1947.) **Studies on the immunological relationships of the psittacosis-lymphogranuloma venereum group of viruses.**—*J. infect. Dis.* **80.** 297–306. [Abst. from abst. in *Bull. Hyg. Lond.* **22.** 729.] **84**

There have now been described a large number of viruses with properties characteristic of the psittacosis-lymphogranuloma group. These agents can be differentiated by various experimental methods, but as a rule complement-fixation tests give cross reactions between most of the members.

More specific differentiation has been achieved by virus neutralization tests, for which sera are prepared in roosters.

In the present work, in addition to the better known viruses, study was made of Ann Arbor virus [KEMPF *et al.* *V. B.* **15.** 392] and Illinois virus [ZICHIS & SHAUGHNESSY (1946) *Bull. Hyg. Lond.*]. Cross neutralization tests were performed with rooster antisera and virus suspensions, the test mixtures being inoculated in mice nasally or cerebrally according to the virus. The authors give a table showing the cross reactions within the members of these groups.

These tests show that each virus studied, except Ann Arbor, possesses a distinctive antigen. Ann Arbor virus seems to share a common antigen with mouse pneumonitis. Meningo-pneumonitis and ornithosis antigens appear to be identical.

MINARD, E. L., & JUNGHERR, E. (1944.) **An apparently new respiratory disease of turkeys.**—*Proc. 16th Ann. Confr. Lab. Wkrs. Pullorum Dis. Contr., June 8th & 9th.* pp. 42–43. **85**

A suspension of lung, air sac membranes and trachea from a turkey with respiratory symptoms was injected into chickens three weeks old. One developed nervous symptoms.

A proportion of chickens inoculated in subsequent passages by the intramuscular and intracranial routes developed nervous or respiratory symptoms after an incubation period of 7–14 days. The agent was maintained for five passages in chickens. The original lung suspension was passaged seven times in chick embryos. No lesions were observed but the infective agent was demonstrated at the sixth day following inoculation.

Histologically there was hyperplasia of the spleen pulp. The arterioles of the brain showed perivascular cuffing with lymphocytes and endotheliosis. Encephalomalacic areas were present in the medulla, diencephalon and cerebrum.

—F. D. ASPLIN.

ANON. (1947.) **Vaccination against smallpox.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* **6.** 164–169. **86**

The "multiple pressure" technique of vaccination is described. It is claimed that this method is almost painless, involves a minimum of trauma and is less likely to be associated with unduly severe reaction or septic complication. A drop of vaccine lymph is placed on the skin and the flat sided or triangular needle held parallel or tangential to the skin. One side of the needle point is pressed firmly and rapidly into the drop about 30 times within ten seconds, the needle being lifted clear of the skin each time. The needle point is not driven into the skin but at each pressure the elasticity of the skin pulls a little of the epidermis over the point of the needle so that the lymph is carried into the deeper epidermal layers.—M. C.

SWAN, C., TOSTEVIN, A. L., & BLACK, G. H. B. (1946.) **Final observations on congenital defects in infants following infectious diseases during pregnancy, with special reference to rubella.**—*Med. J. Aust.* Dec. 28th. 889–908. [For previous parts see *V. B.* **17.** 323, and **18.** 320.] **87**

Of 61 cases previously recorded 49 were re-examined, disclosing that:—of 17 children, previously regarded as normal, nine had defects, such as cataract, hypospadias, heart disease, deaf mutism and microcephaly, ascribed to maternal disease during pregnancy; in 14 cases the previous diagnosis was correct; in three cases a certain defect was no longer apparent, in one of these cases other anomalies were still present; in 12 children additional defects were found; in three children the defects originally diagnosed

were not present, or their presence was doubtful and other defects were present.

New clinical material for this series of cases has been presented, including studies of the post-natal development of the children. The ages at which they were able to (i) assume the sitting position unaided, (ii) walk, (iii) control micturition and defaecation, and their weights and heights were considered.—D. A. TITCHEN.

PARSONS, L. G. (1946.) **Maternal rubella as a cause of congenital defects.**—*Brit. med. Bull.* **4.** 193–196. **88**

The literature on observations made in Australia, Great Britain and the U.S.A., on the association between rubella infection (German measles) in the pregnant mother and congenital defects in children is discussed.

The investigators in Australia concluded that " when a woman contracts rubella within the first two months of pregnancy it would appear that the chances of her giving birth to a congenitally defective child are in the region of 100 per cent., and if she contracts it in the third month about 50 per cent.". The commonest defects found were those of the eye (cataract) and of the heart, whilst a later worker mentions defects of the teeth.

American investigations have not supported these findings and British workers have only recorded isolated examples of association, although an attempt has been made to associate rubella infection in pregnancy with deaf-mutism.

Amongst objections to the theory, P. stresses the difficulty of diagnosing rubella, and the difficulty in explaining why a disease which is so mild in the adult should produce such disastrous effects on the foetus. The suggested explanation of the last point is that mammalian embryonic tissue is more susceptible to infection than adult tissue, and that possibly the defects are associated with a mild virus and not with the more severe ones, as the effect of the latter is to produce abortion.
—U. F. RICHARDSON.

HOFER, A. W. (1947.) **Bacteriophage under the ordinary microscope.**—*J. Bact.* **53.** 781–792. [Author's summary slightly amended.] **89**

Experiments were begun (1) to find whether the small particles present in bacteriophage preparations and shown by the electron microscope could be stained and made visible under the ordinary microscope, and (2) to learn, if possible, whether these particles are, indeed, bacteriophage. The work of the author and of Luria, Delbrück, and Anderson [see *V. B.* **14.** 158] showed that these particles have a diameter greater than that of bacterial flagella.

Staining methods were developed for demonstrating these particles under the ordinary microscope.

It has been shown that the particles in question are ordinarily acid-fast.

By staining preparations of various ages, it became apparent that the particles enlarge in size in the presence of bacteria; that they increase in number as the bacterial cells decrease; and that the particles developing in the partially lysed cells and showing in the zones where bacterial cells have been before lysis has occurred stain particularly sharply.

Using the newly developed phase microscope, it has proved possible to see the same particles unstained while they are still in living condition. In this way, it is possible to see and to photograph the successive stages of lysis; the immobilization of the cells; the appearance of the larger, *i.e.*, visible bacteriophage particles; union of these with the cells; the preliminary diminishing of the size of the granules subsequent to attachment to the cells; and immediately following, the increase in size of the former at the expense of the cells, until the latter burst and the protoplasm flows out. Finally, there is development within the cell protoplasm of new bodies similar to the original granules. These observations seem to demonstrate that the particles under observation actually are those of bacteriophage.

Furthermore, after observing under the phase microscope the various stages of lysis, it was possible to re-examine under the ordinary microscope preparations made by the acid-fast technique and to locate therein structures that had previously been seen only under the phase microscope. This demonstrates both the existence of the bacteriophage particles and the usefulness of the ordinary microscope for seeing them.

BLAKEMORE, F. (1947.) **Conjunctivitis and keratitis of cattle and sheep associated with the presence of " cell-inclusion " bodies.**—*J. comp. Path.* **57.** 223–231. **90**

B. describes a specific conjunctivitis of sheep characterized by the presence of inclusion bodies in the superficial conjunctival cells. Usually mild and transitory, it is sometimes complicated by keratitis, when it becomes chronic. Infection leads to some immunity. The lachrymal secretion of a sheep was infective 120 days after clinical recovery. The morphological features and staining propensities of the " cell-inclusion " bodies are described. The infective agent would not pass Berkefeld V filters, and lachrymal secretion was infective after two days in the ice chest, but was inactivated in the same period by 50% glycerin and by drying over phosphorus pentoxide. B. thinks it probable that these inclusion bodies represent the infective agent which, resembling in some respects both viruses and rickettsia, he places in an intermediate position.

Two outbreaks of bovine kerato-conjunctivitis were studied. Conjunctivitis was reproduced with material from each, but was relatively mild and might have been due to transferred secondary bacterial infection. Conjunctival inclusion bodies were present in the experimental animals and were found in large numbers in the early stages of the natural disease. The appearance, arrangement and staining propensities of the inclusions are described. B. considers that they may have developed from the granular bodies which have been found in the conjunctival cells of healthy cattle and sheep.—L. M. MARKSON.

See also abst. **114** (tumors).

IMMUNITY

GOYAL, R. K. (1948.) **The relative susceptibility to infection and the response to immunization of laboratory animals in India and abroad.** —*Indian med. Gaz.* **83.** 35–37. [Author's summary copied *verbatim.*] **91**

The guinea-pigs immunized in England with tetanus toxoid produce a higher titre of antitoxin as compared with the guinea-pigs bred in Kasauli. It is therefore not advisable to insist on the same test for standardization of tetanus toxoids as is laid down for England.

Rabbits and guinea-pigs bred and reared in India are much more resistant to tuberculosis than those in Europe, the injection of tubercular material into these animals for isolation and classification of tubercle bacilli into human and bovine strains is not likely to give the same results as in Europe.

BESSIS, M., & FREIXA, M. (1948.) Sur un sérum de Lapin anti-Lièvre. [**An anti-hare serum from rabbits.**]—*C.R. Soc. Biol. Paris.* **142.** 26–27. **92**

An attempt was made to obtain iso-immunization of pregnancy by the hybrid, hare-rabbit, after finding the condition in mules.

It was impossible to obtain wild hares, so the Belgian hare was used. Three injections of 5 ml. washed red cells of a Belgian hare were given intravenously to 12 rabbits on alternate days. After two and a half months one of the rabbits produced a serum (" L ") which agglutinated the red cells of 22 Belgian hares and the red cells of 82% of 150 rabbits.

In addition, by iso-immunization of rabbits, three other immune sera were obtained which probably correspond to those already described by LEVINE & LANDSTEINER (1931), MARCUSSON (1936) and others.

The conclusion drawn was that the Belgian hare and the rabbit are two different " races " and that further work on the effect of an " L-positive " foetus on an " L-negative " mother is merited.—D. HEARD.

BUENO, P. (1946.) **Lesions of reticuloendothelial cells in anaphylactic shock.**—*Arch. Path.* **42.** 412–418. **93**

Mature g. pigs were sensitized by injecting them with normal horse serum in saline, and about three weeks later, the shock was induced by an intraperitoneal injection of horse serum. The g. pigs died of anaphylactic shock or were killed after an hour, and fragments of liver, spleen and lymph nodes were incubated in Tyrode's solution at 37°C. Sections were then made. In another series, g. pigs were killed from 2–9 hours after the onset of shock and the tissues fixed immediately. Twenty-five controls received the shocking but not the sensitizing dose. In all, 83 g. pigs were used.

In the liver of the sensitized g. pigs killed after three hours, or in the incubated liver tissues, degenerative changes were seen in the nuclei of the Kupffer cells. In the spleen, cells which reacted were found only in the germinative centres of follicles. In the lymph nodes examined, the large and clear follicular cells and the young reticular elements scattered throughout the cortical layer were the most intensively damaged. No significant changes were found in the corresponding cells of the controls.

B. comments on the fact that the only types of cell found injured were those credited with playing a role in antibody formation.—L. M. M.

See also abst. **5-7** (BCG.); **19** (mallein); **22** (swine erysipelas); **54** (trichomoniasis); **57** (malaria); **62** (rabies); **65** (sheep pox); **72** (rinderpest); **84** (psittacosis); **86** (smallpox); **103** (scorpions); **111** (neoplasms); **146** (reticuloendothelial cells); **180** (oral vaccines and immunization by other unusual routes).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

WEBBER, H. H., WAGNER, R. P., & PEARSON, A. G. (1946.) **High-frequency electric fields as lethal agent for insects.**—*J. econ. Ent.* **39.** 487–498. **94**

The insecticidal powers of a high-frequency field produced by a megatherm dielectric heating unit are described. The frequency was 11 megacycles per sec. A capacity potentiometer was devised in order to determine the voltage sufficient to kill insects in food packages within a reasonable time. Although temperature was largely the cause of death, there appeared to be a primary effect of

the field on the insects which varied with the type of insect and insect tissue.

Ephestia kuhniella larvae and *Tribolium confusum* adults, pupae and larvae were used and a correlation was found between temperature, time, field intensity and mortality. 100% mortality of *T. confusum* was caused by a voltage of 1,790 for 18 sec., the temperature being 75°C. In the case of *E. kuhniella*, 100% mortality was caused by 1,563 volts for 25 sec., the temperature being 82·9°C.—BERYL A. THURSTON.

RADELEFF, R. D. (1947.) **Lead arsenate for the removal of bots. A preliminary report.**—*Vet. Med.* **42.** 425. **95**

One hundred and fifteen horses, including both foals and adults, were dosed with lead arsenate at the rate of 0·2 g. per 100 lb. live weight. No toxic effects were noted, and removal of bots appeared to be satisfactory.—G. B. S. HEATH.

CHLÁDEK, V. (1947.) **Alopecia of the cheek in horses in hot weather** [*Gastrophilus pecorum* **invasion**].—*J. R. Army vet. Cps.* **18.** 126–127. **96**

An eruption of the skin of the face is said to be common in horses in Carpathia and is attributed to the migration through the skin of larvae of *Gastrophilus pecorum*. It is indicated that the larvae hatched from eggs laid on the cheeks reach the stomach not merely by being licked off and swallowed but by penetrating the skin and buccal mucosa. The lesion is illustrated by photographs. —M. C.

CAMPANA, Y. (1946.) Présence d'un argasiné (*Ornithodorus lahorensis*) parasite du mouton en Macédoine. [*Ornithodoros lahorensis* **parasitizing sheep in Macedonia.**]—*Ann. Parasit. hum. comp.* **21.** 263–266. **97**

The tick under consideration was found infesting sheep in Macedonia, and is shown to be identical with *Ornithodoros lahorensis* Neumann 1908, although it had previously been described as a new species (*Alveonasus macedonicus* Pavlov 1943). A description of the species is given, and details of its biology in Macedonia and Iran presented. This work shows that the range of the species now extends into Europe. It was previously known from a wide area embracing S. Asia and N. Africa. It is suggested that it was introduced into Macedonia by importation of sheep from Cyrenaica.—L. DAVIES.

PORTMAN, R. W. (1945.) **Pasture management kills Lone Star ticks** [*Amblyomma americanum*]. —*Circ. Mo. agric. Exp. Sta.* No. 297. pp. 4. **98**

The larvae of *A. americanum* require a blood feed during their period of activity (from about June 15th onwards in Missouri) in order to moult and survive the winter. Thus, keeping a pasture stock-free from that date until after the first heavy frost results in the death of larvae from starvation. By resting pastures for two successive years and occasionally thereafter the numbers of these ticks can be greatly reduced.—L. DAVIES.

BEKKER, P. M. (1944.) **Tobacco extract for control of arsenic-resistant blue tick and cattle lice.**—*Fmg S. Afr.* **19.** 775–780. **99**

Detailed instructions are given on the making up of nicotine dip from 40% nicotine sulphate. The procedure for adding nicotine to an arsenic dip, and of indirectly determining the nicotine content of the bath is given. A nicotine content of 0·04% is aimed at in the bath.—L. DAVIES.

COLAS-BELCOUR, J. (1941.) Sur le cycle évolutif de deux Ornithodores de grande taille, *Ornithodorus canestrinii* Birula 1895 et *O. delanoëi* Roubaud et Colas-Belcour 1931. [**The life-cycle of two large** *Ornithodoros* **ticks,** *O. canestrinii* **and** *O. delanoei*.]—*C. R. Acad. Sci., Paris.* **212.** 512–514. **100**

The author made a comparative study of the life cycle of *O. canestrinii* and *O. delanoei* at 28°C. and 90% relative humidity. In *O. canestrinii*, egg-laying occurred 26 days after engorgement; the larvae took 24 days to hatch. These fed for 12–19 days (on g. pigs). The nymphs, after several days at this stage had a 10–30 min. blood meal. Second, third and fourth stage instars followed at intervals of 18, 21 and 23 days respectively, each being preceded by a blood meal. 27–51 days later, some of the nymphs developed into adult males. The others passed into fifth instar nymphs and after 37–40 days emerged as adult females.

The larvae of *O. delanoei* took 5–10 days to engorge. The nymphal stages followed at a rate similar to that of *O. canestrinii*, but the fourth stage nymphs took 56–315 days after their meal to develop into fifth stage nymphs or adult males.

In the number of larval stages *O. canestrinii* and *O. delanoei* are typical of the genus, but the long larval feeding resembles that of the genus Argas.—BERYL A. THURSTON.

BRUMPT, E., & CALLOT, J. (1947.) Rôle pathogène de l'acarien *Dermanyssus gallinae*. [**Pathogenicity of** *D. gallinae*.]—*C. R. Soc. Biol. Paris.* **141.** 1253–1254. **101**

The mite *Dermanyssus gallinae* present in large numbers on fowls caused death in one or two days. Young chicks were more susceptible than older birds. Fowls given an intra-muscular injection of an extract prepared from 150 mites were unaffected, indicating that the pathogenic action was not due to a virus. P.M. examination of the blood and organs of birds with heavy infestations did not reveal acute anaemia. Further,

the birds did not acquire immunity against heavier infestations after sublethal natural infections. It is concluded that death was due to irritation caused by a heavy infestation. Ducks, although easily parasitized, did not succumb. Rabbits may be parasitized, but not g. pigs.—B. A. THURSTON.

KASCHULA, V. R., & STEPHAN, S. A. R. (1947.) **Mites, hitherto unrecorded in South Africa, collected in Natal from fowls, pigeons, turkeys, guinea-fowls, wild birds and rabbits.**—*Onderstepoort J. vet. Sci.* **22.** 51–75. **102**

Sixteen of the 17 mite species recorded were found to be widespread in S. Africa. Only two of these previously unrecorded mites—species of *Syringophilus* from birds—apparently damage their hosts, causing distortion and malnutrition of the feathers. The others are harmless as far as is known.—L. DAVIES.

GRASSET, E., SCHAAFSMA, A., & HODGSON, J. A. (1945.) **Immunological studies on scorpions.**—*J. Immunol.* **51.** 231–248. **103**

Scorpions of three common South African genera appeared to be only very slightly affected by the injection of massive doses of tetanus, diphtheria or dysentery (*Shigella dysenteriae*) toxins into their body fluid. Injection of repeated doses of tetanus toxin or tetanus formol toxoid did not result in any appreciable antitoxin formation, and no agglutinin production in the body fluid followed repeated doses of heated bacterial suspensions of *Salmonella typhi* and *S. paratyphi*. Scorpions appeared to have considerable tolerance to large doses of homologous scorpion venom, and rather less to heterologous scorpion venom. Their sensitivity to snake venom, particularly viperine venom, was greater.—L. DAVIES.

QUISEFIT, E. (1946.) Une piqure de scorpion chez un cheval. Efficacité du sérum antiscorpionique. **[A case of scorpion sting in a horse.]**—*Arch. Inst. Pasteur Algér.* **24.** 306–307. **104**

An alleged case of scorpion sting in a horse is reported. There was severe oedema of the tongue, but the condition was cured by injections of antiscorpion serum.—BERYL A. THURSTON.

See also absts. **67** (chicken mites); **140** and **141** (D.D.T.); **178** (textbook of medical entomology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

MIKAČ.Č, D. (1942.) Nekoliko slucajeva atipicne cisticerkoze. **[Atypical cysticercoses.]**—*Vet. Arhiv.* **12.** 309–311. [Abst. from French summary.] **105**

Four cases are described: one probably due to *Cysticercus cellulosae* in the brain of a woman; two cases of disseminated cysticercosis (*C. cellulosae*) in dogs, one in the brain and one in the liver; a case of disseminated cysticercosis in the brain of a calf.—K. J. SINCLAIR.

GELFAND, M. (1948.) **Cysticercosis of the brain in the African in Rhodesia. [Human.]**—*East Afr. Med. J.* **25.** 110–112. [Author's summary copied *verbatim*.] **106**

Seven cases of cerebral cysticercosis are reported in a series of 2,148 consecutive autopsies.

The clinical features of the disease are described and its importance as a cause of epilepsy in the adult African, is stressed.

HERNBERG, P. A. (1947.) **On the secretion of gastric juice in recovery after pernicious bothriocephalus anemia.**—*Acta med. Scand.* **129.** 12–18. [Author's summary copied *verbatim*.] **107**

Follow-up examination of 24 patients afflicted with pernicious anemia was carried out. After the vermifuge 1–22 years had elapsed. The blood picture showed no clear divergence from the normal. The composition of the gastric juice after fractioned gastric secretion tests after alcohol and histamin stimulants showed on an average a more deteriorated secretion than in normal cases. Achlorhydria occurred in 12 cases, absence of chymase in 9, and a lack of pepsin in 9 out of 22 cases. In the cases with achylia only 2 or 3 years had, on an average, elapsed after the worm cure. In other cases 7–9 years had passed after the vermifuge. The age of the patients played a determining part in the values obtained.

REPETTO, E. (1941.) Valore clinico della intradermoreazione del Casoni e della eosinofilia ematica nella diagnosi dell'echinococcosi. **[Clinical value of the Casoni intradermal test and of blood tests (eosinophilia) in diagnosing echinococcosis.]**—*G. Batt. Immun.* **27.** 381–398. [English, French & German summaries.] **108**

Blood examinations and the Casoni intradermal test were carried out on 23 patients with echinococcus. In 55·8% of the cases the count of eosinophilic blood corpuscles was not above 8%; in 38·5% it varied from 8 to 15% and in the remaining 7·7% it exceeded 15%. R. concludes that if eosinophilia persists and exceeds 8%, although non-specific it is a useful test for echinococcosis in man, particularly where the possibility of eosinophilia in the blood due to other diseases is excluded.

Casoni's intradermal test was positive in 78·2% of the patients and R. considers that it is of some value in the diagnosis of human echino-

coccosis. It is, however, often positive in patients in which clinical and surgical treatment have excluded the possibility of echinococcosis.

—K. J. SINCLAIR.

LUCKER, J. T., & NEUMAYER, E. M. (1947.) **An experiment on the relationship of diet to hookworm disease in lambs.**—*Amer. J. vet. Res.* **8.** 400–412. **109**

Two lambs fed on a diet roughly equivalent to poor pasturage and two lambs fed on good diet were infected with larvae of *Bunostomum trigonocephalum* which were placed on the skin. The former died of their infection after having developed extreme anaemia and also harboured more hookworms than the latter pair which developed only a moderate anaemia and eventually regained almost normal blood values. The authors point out the two-fold effect of a deficient diet, (1) the effect on the number of larvae developing to maturity and (2) the effect on the ability to compensate for blood loss. The possibility of the poor diet itself causing the anaemia was excluded by appropriate controls. The two lambs in each dietary pair were infected in different ways. One was infected with 50,000 larvae within one week, the other with 139,000 larvae within 38 days. In both pairs immunity to re-infection was evident because the ones infected with the larger number of larvae over a longer period harboured fewer hookworms than their mates. It appears that the mechanism of immunity was originally active in the poorly fed lambs as well as in the ones receiving an adequate diet, but that in the former at some stage in the infection the immune mechanism ceased to operate.

—J. F. A. SPRENT.

KREIS, H. A. (1947.) Helminthologische Probleme bei unseren Haustieren. **[Problems of helminths in our domestic animals.]**—*Schweiz. Arch. Tierheilk.* **89.** 421–437. **110**

A general survey of some of the problems and difficulties encountered by the parasitologist.

The relations of host, intermediate host and parasite are discussed with reference to *Habronema muscae*, and the control of parasites by means of their own parasites is illustrated by an example involving *Siphona* (*Lyperosia*) *exigua*. Some of the modern anthelmintics are briefly discussed.

—C. AHARONI.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

KIDD, J. G. (1946.) **Suppression of growth of Brown-Pearce tumor cells by a specific antibody. With a consideration of the nature of the reacting cell constituent.**—*J. exp. Med.* **83.** 227–250. [Author's summary copied *verbatim*.] **111**

Experiments are reported in detail which show that an antibody which appears in the blood of certain rabbits implanted with the Brown-Pearce tumor or injected with cell-free extracts of it is capable of suppressing the growth of the tumor cells under a variety of experimental conditions, the effects of the antibody being wholly distinct from those of unknown factors that frequently bring about regression of the growth. The implications of the findings are discussed with particular reference to facts indicating that the distinctive cell constituent with which the antibody reacts may play a significant part in the proliferative activities of the Brown-Pearce tumor cell.

LOEB, L. (1947.) **The causes of cancer.**—*Bull. N.Y. Acad. Med.* **23.** 564–580. **112**

L. surveys the general trends of cancer research during the past 50 years. He deals with the work done on the cell-stimulating factors, such as the chemical and physical agents, the action of parasites and hormones, and also with the influence of the hereditary make-up of the cells.

Viruses as a possible cause of cancer are dealt with at some length. L. lists the evidence which he maintains makes "the view that extraneous viruses are the general immediate cause of cancer improbable". He considers that as a result of a long-continued stimulation of the cell, in conjunction with the genetic factors, there develops presumably in the cytoplasm a growth-promoting factor which incites the cell to continuous growth. The growth factor has the power of autocatalytic propagation and in this way the cancerous change becomes permanent.—A. R. JENNINGS.

LIPNICKI, J. (1946.) Nowotwory i ich leczenie. **[Neoplasms and their treatment.]**—*Med. Wet.* **2.** 161–167. [Abst. from French summary.] **113**

A general article. The author states that all mammals carry the germs of tumours, but that for their development certain predisposing characters are required. He discusses clinical aspects of the treatment of animals bearing tumours, detailing palliative measures. He speaks of liver changes as the cause of cachexia due to malignant tumours, and details certain measures which in his opinion might possess prophylactic value.—J. H.

NEWIADOMSKI, M. M. (1946.) Von der Virus Entstehung der Geschwülst. **[The occurrence of viruses in tumours.]**—*Acta med. Scand.* **125.** 97–107. [Author's summary copied *verbatim*.] **114**

Prof. W. W. Podvissotzki was the first to advance in 1908 a virus tumour theory. Acellular transfer of chick leukemia was first proved by

Ellerman and Bang in 1908 and of rabbit myxoma by Splendore (1908).

The filtrability of chick sarcoma was demonstrated by P. Rous in 1911. The possibility of blood transfer of the Ehrlich strain was demonstrated by the author in 1928 and confirmed by Blumenthal and Lipschutz in 1929.

The author was privileged to demonstrate the ability of sarcoma virus and of that of rat and mouse cancer to pass through the collodion membranes (gauge 15–20 mμ) and the presence of elementary bodies in the acellular filtrate of the Flex.-Jobl strain (1933); the occurrence of elementary bodies of various strains was shown in 1939 (Kritschevsky-Sinellinkoff, Jensen and oth).

The origin of tumor cells from body cells, advocated by Virchow's theory has never been confirmed. Conversion into malignant cells under the influence of viruses or carcinogenic substances failed so far to be demonstrated.

The study of Flex.-Jobl strain development allowed the hypothesis of the origin of cancer cells from elementary bodie(s) ? and that these cells present the visible stage of the cancer virus(?s).

SANDSTEDT, H., SJÖBERG, K., NILSSON, N. J., & NORDSTRÖM, G. (1947.) **Lymphadenosis in cattle. Preliminary report.**—*Skand. VetTidskr.* **37.** 604. [In English.] **115**

The authors claim that brewers' yeast has a therapeutic effect "in cases which have not developed too far". They indicate that external influences play an important part in the development of the disease.—A. R. JENNINGS.

CRAVER, L. F. (1948.) **Recent advances in treatment of lymphomas, leukemias and allied disorders.**—*Bull. N.Y. Acad. Med.* **24.** 3–25. **116**

The subject is dealt with from two aspects, the treatment of the conditions by radiation therapy and by chemical agents. The chemotherapeutic substances discussed are the nitrogen mustards, urethane and stilbamidine. These substances in general appear to act as palliatives only, but they may prolong the life of the patient. The results obtained with them are irregular and all are associated with toxic effects.

Radiation therapy is discussed with special reference to radio-active isotopes. Again the general impression is that treatment in the main is palliative only.—A. R. JENNINGS.

KIRSCHBAUM, A., & MIXER, H. W. (1947.) **Induction of leukemia in eight inbred stocks of mice varying in susceptibility to the spontaneous disease.**—*J. Lab. clin. Med.* **32.** 720–731. **117**

Using ten weeks' old mice of eight inbred strains, methylcholanthrene as the carcinogen of choice, oestrone and oestradiol dipropionate as the oestrogens, and exposure of the entire body to X-rays as the third method of inducing leucaemia, the authors found that the effectiveness of these leucaemogens was dependent upon the genetic constitution of the stock involved. Leucaemogenesis was in decreasing order as follows, X-rays, oestrogens, methylcholanthrene. In strains which were susceptible to the last carcinogen the incidence of induced leucaemia was high.

It is suggested that since these leucaemogens are also carcinogens there is support for the view that leucaemia is a neoplastic disease.—A. R. J.

OLSON, C., Jr. (1944.) **The serial passage of a transmissible lymphoid tumor.**—*Proc. 16th Ann. Conf. Lab. Wkrs. Pullorum Dis. Contr., June 8th & 9th.* p. 40. **118**

Olson's lymphoid tumour was maintained for 132 transfers in fowls. Two lines were begun at the 45th passage; one was transferred every 10th day and the other every 15th day. The reaction of chickens following inoculation with tumour cells varied from complete absence of tumour growth to massive local growth with diffuse metastasis. In some chickens the tumour grew for 2–3 weeks and then completely regressed. Passage at 10-day intervals caused the tumour to be more active than passage at 15-day intervals.

—F. D. ASPLIN.

OLSON, C., Jr. (1947.) **Immunization against a lymphoid tumor of the chicken. IV. Use of miscellaneous tissues.**—*Cornell Vet.* **37.** 231–240. [For previous parts, see *V. B.* **16.** 438, & **17.** 317.] **119**

These observations continue those already reported. Certain tissues including liver, kidney, spleen, muscle, thymus and blood of fowls bearing a lymphoid tumour might or might not cause tumour growth in chickens on transplantation, yet all induced resistance to transplants of the lymphoid tumour cells. Plasma from a fowl with the lymphoid tumour did not induce a detectable reaction or resisistance to subsequent inoculation.

Tissues from a normal chicken or chick embryo did not induce resistance. Neoplastic tissue from spontaneous lymphocytoma (visceral lymphomatosis) induced slight resistance against the lymphoid tumour in only two of 12 trials.

—F. D. ASPLIN.

NUTRITIONAL AND METABOLIC DISORDERS

KORNBERG, A., DAFT, F. S., & SEBRELL, W. H. (1946.) **Granulocytopenia and anemia in rats fed diets of low casein content.**—*Science.* **103.** 646–648. **120**

Weanling rats fed a protein free diet, developed granulocytopenia and anaemia within 28 days, whether crystalline folic acid was added to the diet or not. The replacement of 18% of the dietary glucose by an equal weight of casein largely prevented the production of these symptoms, even when the food intake was severely restricted.

In subsequent, modified experiments, neither casein nor crystalline folic acid was as effective in producing granulocyte counts of more than 1,000 cells per cu. mm. as were folic acid with 18% of casein, and folic acid with a mixture of purified amino-acids.

Data on the treatment of anaemia are incomplete.—J. T. Abrams.

Fritz, J. C., Hooper, J. H., Halpin, J. L., & Moore, H. P. (1946.) **Failure of feather pigmentation in bronze poults due to lysine deficiency.**—*J. Nutrit.* **31.** 387–396. **121**

Failure of feather pigmentation in young, bronze, turkey poults, was observed in preliminary tests with rations which differed in their fibre, calcium, glycine and lysine contents. The replacement of 20% of soya bean meal in a normal diet by 20% of maize meal gluten, in particular, produced poor pigmentation.

By adding to a known poor basal diet, (a) 1·25% of glycine or (b) 10·5% of lactalbumin, rations were produced whose glycine or lysine contents were equal to that containing 20% soya bean meal; the glycine failed to produce satisfactory pigmentation. Lysine (1·8 g. per lb.), added to the poor basal ration, was effective as a chromogen, whereas calcium pantothenate (10 mg. per lb.) produced no beneficial effect. Variations in the limestone content of the rations were also ineffective.

Although rate of growth is a pertinent factor in general it appears that turkey poults need rations containing 1·1–1·2% of lysine for satisfactory growth and feather pigmentation.—J. T. A.

Venn, J. A. J., McCance, R. A., & Widdowson, E. M. (1947.) **Iron metabolism in piglet anaemia.**—*J. comp. Path.* **57.** 314–325. **122**

In experiments on iron metabolism in piglet anaemia, crude ferric oxide (approximately 12 or 16 g. per day during pregnancy and lactation) was used to supplement the rations of sows, while piglets were given ferrous sulphate (5 mg. Fe per lb. body weight per day). Care was taken to prevent accidental introduction of iron at critical periods. Analyses of the whole carcasses of the piglets were made.

The iron contents of the bodies of newly born pigs ranged from 1·92–3·48 mg. per 100 g., with much smaller intra- than inter-litter variations. Neither the size, nor the iron contents of the whole body, or of the liver and spleen, or of the blood of the newborn piglets, were materially influenced by giving supplementary iron to the sow during pregnancy.

In piglets which received no supplementary iron, the total iron contents of the body at birth, at three weeks, and at eight weeks of age were respectively, 47·2, 125 and 494 mg., the corresponding values per 100 g. body weight being 3·09, 1·92 and 4·15 mg.

Piglets which received supplementary iron during the suckling period made greater weight gains than those which did not, and had stored more iron at three weeks of age (286 mg. against 108): they also took more milk from the sow.

The body of one piglet, which itself received no iron supplement and whose dam was not dosed, was analysed after it had had access to soil for three weeks, and was found to contain more iron than those which were given ferrous sulphate. Analysis of the washings of the gut revealed the presence of 513 mg. of iron.

The iron content of the milk of lactating sows was not increased by the administration of iron.

—J. T. Abrams.

Day, H. G., & Skidmore, B. E. (1947.) **Some effects of dietary zinc deficiency in the mouse.**—*J. Nutrit.* **33.** 27–38. **123**

A diet containing approximately 0·3 p.p.m. of zinc produced retardation of the growth of weanling mice, although growth was satisfactory on the same diet, supplemented by 40 μg. of zinc per mouse per day.

Apart from loss of weight, in the zinc deficient animals there was loss of hair from the shoulders and back of the neck, while the catalase activity of the liver and kidneys, but not of the blood, was lowered and could not be increased by the addition of zinc salts to the tissue preparations.

Cadmium could not be used to fulfil the role of zinc in the diet.

No specific changes in the incisors or molars of zinc deficient mice could be seen on histological examination.—J. T. Abrams.

Matterson, L. D., Scott, H. M., & Singsen, E. P. (1946.) **The influence of sources of phosphorus on the relative efficiency of vitamin D_3 and cod liver oil in promoting calcification in poults.**—*J. Nutrit.* **31.** 599–608. **124**

Turkey poults (20 per group) were placed on a diet, containing 1·21% calcium and only 0·23% phosphorus, which was supplemented with NaH_2PO_4,H_2O and calcium-magnesium phytate respectively to give two rations of almost equal phosphorus content (0·61% and 0·55% respectively) but different phosphorus availability. To

these basal diets activated 7-dehydrocholesterol and pure cod-liver oil, which had been assayed by the A.O.A.C. [The Association of Official Agricultural Chemists introduced the "A.O.A.C. Chick Unit"] method, were added on a unitage basis. The vitamin D units added per 100 g. of diet were 0, 40, 80, 160 and 200 respectively for both diets, and also 320 and 640 for the phytate diet only.

The tibiae of the birds were ashed after alcohol-ether extraction. In the groups of poults receiving inorganic phosphate there was no more efficient calcification using 7-dehydrocholesterol than using cod-liver oil on a unit for unit basis, but those birds which were being given phytate had better calcification, at all dosage levels, where 7-dehydrocholesterol was used, the differences being proportionally greater at the lower dosage levels.

On this basis the authors seek to explain the discrepancies to be found in the literature with regard to the vitamin D needs of turkey poults.

—J. T. Abrams.

See also abst. **109** (hookworm disease and diet).

DISEASES, GENERAL

Whitlock, J. H., & Baker, D. W. (1947.) **The diagnosis of diseases of lambs.**—*Rep. N.Y. St. vet. Coll. 1945–46.* No. 14a. pp. 92–99. **125**

The authors attempt to reduce diagnosis of certain sheep diseases to a simple process of elimination by reference to tables. The paper contains a useful summary of diagnostic P.M. lesions which would repay study by all interested in sheep diseases.

Tables are given showing "Diseases Which May Cause Death with Few Symptoms Warning of Illness", "Diseases Characterized by Nervous Symptoms", "Diseases Characterized Chiefly by Skin (Wool), Oral, or Conjunctival Lesions", "Diseases Characterized by Lameness", and "Other Diseases".—G. B. S. Heath.

Platt, C. S. (1945.) **New Jersey egg-laying tests, 1916 to 1943. Production and mortality of White Leghorn, Rhode Island Red, and Barred Plymouth Rock Pullets.**—*Bull. N.J. agric. Exp. Sta.* No. 720. pp. 24. **126**

This bulletin summarizes the records of 29,714 White Leghorns, 4,948 Rhode Island Reds and 3,002 Barred Rocks entered in three New Jersey laying tests between 1916 and 1943.

On the score of egg production the Rhode Island Reds have shown the greatest gains, averaging 141·3 eggs in 1916, while in one test in 1940 they averaged 234·6. The Barred Rock averages rose from 149·8 in 1916 to 217 in 1941, while those of the White Leghorn increased from 165·1 in 1916 to 211·1 in 1941.

In 1916 the mortality among the White Leghorns and Rhode Island Reds was about 10% while in the Barred Rocks it was nearly 15%. About 1927 mortality increased to 30% among the Leghorns. By 1943 it averaged 16% for the Rhode Island Reds, 18% for the Barred Rocks and 19% for the Leghorns. No specific reason was deduced for the fluctuations in mortality.

The bulletin includes tables showing statistical analysis of the collected data.—D. Luke.

Meschini, S., & Meschini, M. (1947.) Su di un caso di insufficienza cortico-surrenale di una bovina. Analogie col morbo di Addison dell' uomo. **[A case of bovine cortico-adrenal deficiency. Analogy with Addison's disease in man.]**—*Zooprofilassi.* **2.** No. 8. 8–11. **127**

A brown alpine cow, ten years old, had previously been lame and stiff in the hind limbs during pregnancy but had recovered. Three days after receiving F. & M. vaccine there were signs of digestive disturbance, and ten days later the animal was lying immobile on its right side. It died without moving four days later. P.M. the adrenal glands were found to be enlarged, and on section showed a uniform yellow colour, with no differentiation between the cortex and medulla.

—R. Macgregor.

Beller, K. (1944.) Zur Frage des sog. Herztodes beim Schwein. **[So-called fatal syncope in swine.]**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* June 23rd. 202–204. **128**

B. discusses the previous literature on fatal syncope in swine. He considers that it is due to a disturbance of the pig's heat regulating mechanism, but does not indicate the cause.—A. L. W.

Johnson, K. L. (1945.) **Infectious pododermatitis in dairy cattle.**—*N. Amer. Vet.* **26.** 665–667. **129**

The author speaks of wet, muddy conditions on the farms in parts of California in the winter, the mud being as much as a foot deep in places, this conducing to foot troubles. Foot rot is encountered in the late autumn or early winter when cows are grazing a late crop of alfalfa which is wet with dew and the coarse stubble from previous crops may have injured the interdigital skin. The treatment advocated is conventional.

—A. L. Wilson.

Moynihan, I. W. (1947.) **Rhinitis of swine. II. An effort to transmit chronic atrophic rhinitis of swine.**—*Canad. J. comp. Med.* **11.** 259–260. [For part I, see *V.B.* **18.** 227.] **130**

Broth cultures of aerobic organisms isolated from the nasal passages of four affected pigs were instilled into the nostrils of three healthy pigs after scarification of the mucous membrane. Nasal discharge from the affected pigs was instilled into the nasal passages of another pig. None of the four healthy pigs developed symptoms of any kind.—R. GWATKIN.

FERGUSON, W. S. (1948.) **A possible relation between the action of clover juice on isolated muscle and 'bloat' in cattle.**—*Nature, Lond.* **161.** 816. **131**

The effect of the juices of wild white clover, S.100 white clover and lucerne on isolated rabbit intestine in Tyrode solution was studied. One of the samples of S.100 white clover came from a field in which two cows had recently died of bloat. The juices caused a rapid and marked diminution in the amplitude and frequency of the gut movements but the degree varied very markedly with different samples; in some cases movements were almost completely arrested.

Juices from grasses from two permanent pastures gave effects resembling those obtained with the clover. Juices from other samples of grass gave different tracings, generally producing stimulation of the movements. Tests have shown that the effect is not caused by inorganic ions. The addition of small quantities of adrenalin to muscle affected by clover juice can cause recovery.

The possible relationship of these findings to the causation of bloat in cattle is suggested.—M. C.

See also abst. **148** (muscle dystrophia); **177** (in South Africa).

POISONS AND POISONING

MOULE, G. R. (1945.) **Sheep and wool. Fluorosis of sheep in Queensland.**—*Qd agric. J.* **61.** 352–356. **132**

Water containing 2 parts per 1,000,000 of fluorine will produce symptoms of fluorosis in the teeth of young sheep. Many bores in Queensland are delivering water containing more than 3 parts per 1,000,000 of fluorine and in one instance 40 parts per 1,000,000 was recorded. High evaporation rates from bore drains or holding tanks increase the relative fluorine content of the drinking water. Damage to incisors and molars of sheep affected by fluorosis are illustrated in the text.

The ways in which fluorosis causes financial loss on sheep are enumerated. M. recommends that in-lamb ewes and young sheep (up to four tooth) should not have access to water containing fluorine. This may mean the provision of surface water but the paddocks watered by the bores which do not contain toxic amounts of fluorine may be used for the lambing and for the growing young sheep.—M. C. FRANKLIN.

HILL, J. L. (1946.) **The percutaneous absorption of arsenic by sheep dipped in arsenical solutions.**—*J. Coun. sci. industr. Res. Aust.* **19.** 251–255. **133**

Sheep carrying two months' wool growth dipped in 0·2% weight by volume sodium arsenite solution absorbed an average of 74 mg. of sodium arsenite percutaneously. This was insufficient to cause death and was excreted in the urine and faeces over a period of 14 days. One young sheep which had received extensive shear cuts was dipped in the same solution but did not absorb appreciably greater amounts of arsenic. Sheep in another group were immersed in a 1·06% weight by volume sodium arsenite solution and killed at various periods after dipping. Appreciable quantities of arsenic were found in the faeces, urine, blood and rumen but very little elsewhere. Results of subsequent experiments indicated that arsenic was selectively concentrated by the salivary gland and so passed to the rumen. It was concluded that with normal dipping practice there is little danger of poisoning because of percutaneous absorption of arsenic and that a high arsenic value found in the rumen and its contents may not necessarily indicate that the sheep had swallowed dip.—N. P. H. GRAHAM.

GRAHAM, A. F., CRAWFORD, T. B. B., & MARRIAN, G. F. (1946.) **The action of arsine on blood. Observations on the nature of the fixed arsenic.**—*Biochem. J.* **40.** 256–260. **134**

Blood from rabbits which had been exposed to arsine, or heparinized rabbit blood which had been put in contact with the gas in the presence of excess air *in vitro*, was tested for its arsenic content and percentage haemolysis, and samples of the haemolysates were dialysed for 48 hours, preliminary experiments having shown that the dialysable arsenic of arsine-poisoned blood is thereby completely removed in less than that time. The non-dialysable arsenic of the blood as a percentage of the total arsenic varied between 54–100%, and 47–60% respectively for the *in vivo* and *in vitro* samples.

In its behaviour with sodium ethyl xanthate, the dialysable arsenic resembles arsenite, but only 70–80% of the non-dialysable material can be converted to the dialysable form by treatment with ferricyanide, from which it is concluded that two forms of non-dialysable arsenic are present. Most of the material which is thus rendered dialysable behaves as arsenite towards the xanthate reagent.

—J. T. ABRAMS.

RUBIN, M., BIRD, H. R., GREEN, N., & CARTER, R. H. (1947.) **Toxicity of DDT to laying hens.** —*Poult. Sci.* **26.** 410–413. **135**

Rations containing D.D.T. to the extent of 0·25%, 0·125%, 0·062% and 0·031% were fed to four groups of laying hens over a 12-week period. The lowest level (0·031%) was harmful to egg production but not to hatchability. With 0·062% both production and hatchability were reduced. Deaths occurred on feeding 0·125% of D.D.T. for 12 weeks; there were moulting, tremors, inco-ordination of the legs, twisting of the neck with the head held downwards, a tendency to rest on the keel, and marked emaciation prior to death.

Abnormal amounts of organic chlorine in the eggs were found at all levels of D.D.T. administered. The maximum concentration of D.D.T. found in the eggs was considerably less than the maximum found in the body fat.—H. PAVER.

MATHEWS, F. P. (1946.) **The poisonous Astragali.**—*Vet. Student, Iowa.* **9.** 26–30. **136**

Locoism, a disease produced by the cumulative effect of the alkaloid locoine, is associated with the ingestion of certain leguminous plants, *Astragalus mollissimus*, *A. earlei*, *A. wootoni*, *A. leutiginosus*, *A. diphysis* and *A. nothoxys*, *Oxytropis lambertii* and *O. saximontana*, all of which are widely distributed in western North America. The disease is characterized by motor and sensory nerve involvement; the predominant symptoms caused by the different species are outlined.

Methods of control and treatment are discussed.—H. PAVER.

PHARMACOLOGY AND GENERAL THERAPEUTICS

For treatment of specific infections see under the appropriate disease group section

KAVANAGH, F. (1947.) **Activities of twenty-two antibacterial substances against nine species of bacteria.**—*J. Bact.* **54.** 761–766. **137**

K. shows how an unknown antibiotic may be identified by testing it against nine different specially selected species of bacteria of which five are Gram-positive (two acid-fast) and four Gram-negative. The reading of this biological test requires a knowledge of the actions of all the known antibiotics against this same set of organisms. Therefore K. tested 17 antibiotics against the nine organisms of the set. He shows in an example how the tentative identification of patulin in a culture filtrate was carried out by the method described.—E. KLIENEBERGER-NOBEL.

DONOVICK, R., RAKE, G., & FRIED, J. (1946.) **The influence of certain substances on the antibiotic activity of streptomycin in vitro. II. The action of some carbonyl reagents on streptomycin.**—*J. biol. Chem.* **164.** 173–181. [For part I, see *V. B.* **18.** 271.] **138**

A detailed investigation of the inactivation of streptomycin by carbonyl reagents such as semicarbazide, thiosemicarbazide, hydroxylamine, phenylhydrazine and hydrazine.

The semicarbazones were particularly useful as their intense absorption bands in the ultraviolet region of the spectrum enabled them to be easily recognized. Comparison with inosose (2, 3, 4, 5, 6-pentahydroxycyclohexanone) semicarbazide indicates that the carbonyl group is present in streptomycin as part of a carbohydrate-like moiety (also by the phenylhydrazones).

Assays, which were obtained by the use of 0·75% tryptone broth and an enriched thioglycollate broth, with *Klebsiella pneumoniae* as the test organism, were complicated by the possible germicidal action of the carbonyl reagents used.

Over 90% inactivation of streptomycin occurred, at room temperature, when 1 μg. of streptomycin was mixed with as little as 0·2–0·3 μg. of, for example, semicarbazide or phenylhydrazine. Inactivation of up to 98% was demonstrated, without interference by the bacteriostatic properties of the reagents, but attempts to obtain higher degrees of inactivation were complicated by these reagent antibacterial activities.—MALCOLM WOODBINE.

GARDNER, F., STEWART, A., & MACCALLUM, F. O. (1945.) **Therapeutic effect of induced jaundice in rheumatoid arthritis.**—*Brit. med. J.* Nov. 17th. 677–680. **139**

An attack of jaundice was induced in 29 patients with chronic rheumatoid arthritis by injection of an icterogenic serum. Temporary improvement was obtained in 25 cases. In many cases a fall in erythrocyte sedimentation rate was observed during the icteric phase followed by a rise to a level above that recorded before jaundice was induced.

It is indicated that the improvement in the joint condition may be related to changes in the plasma proteins.—M. C.

BLAXTER, K. L. (1945.) **Control of flies in cowsheds. Experiments with D.D.T.**—*J. Minist. Agric.* **42.** 112–115. **140**

In tests at various centres in Britain spraying of the walls of cowsheds with D.D.T. solutions did not cause satisfactory reduction in the numbers of flies in the buildings, although D.D.T. is highly toxic to the fly species concerned. *Musca* and *Fannia* spp. frequently settled on the cowshed walls and there was considerable mortality, but fresh flies entered by various means, notably by

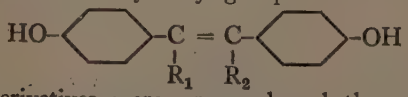
accompanying the cows in at milking time. Of the biting flies only *Stomoxys*, to some extent, left the cows while in the byre to settle on the walls. Spraying the cattle with D.D.T. did not cause a reduction in the numbers of flies in the buildings.
—L. DAVIES.

YEAGER, J. F., & MUNSON, S. C. (1945.) **Physiological evidence of a site of action of DDT in an insect.**—*Science.* **102.** 305–307. **141**

Results of injection experiments with cockroaches indicated that the action of D.D.T. was different from that of nicotine; it appeared that D.D.T. acted more readily on motor than on sensory fibres, and that it could bring about repetitive impulse discharges along motor fibres. The authors point out that D.D.T. may cause symptoms of toxicity by acting on the region of a nerve lying between the origin of the fibres in the ventral nerve cord and their terminations in the leg, exclusive of the myo-neural junctions. This does not preclude the possibility of D.D.T. acting on nerves running to other appendages and parts of the body.—L. DAVIES.

DODDS, E. C., GOLBERG, L., LAWSON, W., & ROBINSON, R. (1939.) **Synthetic oestrogenic compounds related to stilbene and diphenylethane. Part I.**—*Proc. roy. Soc.* Ser. B. **127.** 140–167. **142**

In this study efforts were made to modify the structure of oestrogenic compounds in the hope of increasing their potency and, in view of the difficulty of the total synthesis of the naturally occurring oestrogenic hormones, to prepare substances the molecules of which would be similar to oestradiol (I) in shape, weight and in the situation of the hydroxyl groups.



12 derivatives were prepared and there was a remarkable peak in the oestrogenic activity of diethylstilboestrol *i.e.*, where $R_1 = C_2H_5$, $R_2 = C_2H_5$.

Biological tests were made on rats to compare the activities of oestrone, oestradiol, diethylstilboestrol and dihydroxydiphenylhexadiene. From a study of results it appears that diethylstilboestrol is roughly two and a half times more potent than oestrone but not so active as oestradiol. The diene compound appears to possess an activity just a little less than diethylstilboestrol. Diethylstilboestrol and the diene compound were given by mouth 0·1–5 μg. in 3 ml. sesame oil and administered in six doses of 0·5 ml. morning and evening for three days.

Details are given of the preparation and properties of many synthetic substances.—E. M. J.

DODDS, E. C., GOLBERG, L., GRÜNFELD, E. I., LAWSON, W., SAFFER, C. M., Jr., & ROBINSON, R. (1944.) **Synthetic oestrogenic compounds related to stilbene and diphenylethane. II.**—*Proc. roy. Soc.* Ser. B. **132.** 83–100. [General conclusions copied *verbatim.*] **143**

(1) The most active synthetic oestrogen so far described is 4 : 4′-dihydroxy-γ : δ-diphenyl hexane—m.p. 185°. This is known to be the *meso* or internally compensated compound.

(2) The second most active compound has an activity of about three-fifths of the former (4 : 4′-dihydroxy-α : β-diethylstilbene).

(3) Any variation in the alkyl substituents on the α : β carbon atoms or in the position of the hydroxyl groups, or by the substitution of the alkyl or hydroxyl groups by amino groups, halogens, etc., is attended with an immediate drop in potency. It must therefore be concluded that hexoestrol and stilboestrol represent the maximum obtainable potency in the $\alpha\beta$-diphenylethane series.

Tables 1–4 combine the available data respecting the oestrogenic potency of stilbene and diphenylethane derivatives.

SHAFIR, A. I. (1945.) K voprosu o sterilizatsii Vozdukha Fisicheskimi metodami Electropretsipitatsii i Ultravioletovoi Radiatsii. [**Air sterilization by electroprecipitation and ultraviolet irradiation.**]—*Gigiena i Sanitariya, Moscow.* No. 6. pp. 1–9. [Abst. from abst. in *Bull. Hyg., Lond.* **21.** 257–258. (1946.) **144**

S. has designed an electrical filter together with an ultra-violet lamp for the sterilization of air in rooms. The filter consists of a cylinder 70 cm. in length, to which a potential of 14 to 35 kv. is applied; air is drawn through the cylinder and organisms and dust particles are removed by electrostatic attraction. Bacterial counts made on air samples before and after passing through the apparatus showed a 99–9 % reduction in the content of organisms. The microfloral residue in treated air contained chiefly staphylococci and, to a lesser extent, *Staph. aureus* and sarcina in the form of bacillary spores.

The ultra-violet lamp gives 34 % of its total radiation at a wavelength of 2,800Å. Air from the room is blown against the lamp by fans, and 40 to 50 cu. m. of air can be sterilized in 15 min.

Changes in temperature-humidity factor during ultra-violet irradiation are negligible but artificial increase in the humidity of the air decreased its sterilizing effects.

Room-to-room infections can be largely eliminated by the interposition of ultra-violet barriers in passages and door openings.

See also absts. **31** (sulphonamides in pneumonia); **46** (penicillin in spirochaetes); **49** (neosalvarsan in dourine); **51** (trypanosomiasis); **55** (trichomoniasis); **70** (equine influenza); **113** (neoplasms).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

SALISBURY, E. J., HAMMOND, J., KORENCHEVSKY, V., ROBERTSON, M., & REWELL, R. E. [Speakers]. (1947.) **Discussion on the span of life.** —*Proc. R. Soc. Med.* **40.** 638–644. **145**

S. suggested that senescence is the result of accumulation of metabolic products and cited examples from the vegetable kingdom to support this view. Conditions for the removal of metabolic products were optimum in the case of unicellular organisms living in a liquid medium; such organisms are indeed immortal. H. described the curve of life in animals with its initial period of growth, then the period of the prime of life followed by senescence and death. By retarding the period of growth by under-nutrition the mean age at death of rats could be increased.

In man genetic factors seem to influence the duration of life. K. said that in man records show that many more women than men attain to great age. R. referred to the protozoa which divide by fission. In such cases the individual A becomes individuals A_1 and A_2 so that it could be argued that there is no end to the span of life, except by starvation or violence.—M. C.

BUENO, P. (1947.) **Reticuloendothelial cells reacting to toxic antigens and to infection.**—*Arch. Path.* **44.** 635–638. [Author's comment and conclusions copied *verbatim.*] **146**

The present observations show that certain cells of the reticuloendothelial system are damaged when toxic antigens are introduced into the organism or during infection. Particularly interesting, however, is the fact that was emphasized initially, that these are the same cells which react during the anaphylactic phenomenon. This shows that certain undifferentiated mesenchymal cells have a special capacity of reacting to different kinds of antigenic stimuli.

On the other hand, the results confirm a series of researches which indicated that toxins damage lymphatic tissue. My observations showed, moreover, that lesions occur not only in the germinal elements of the lymphatic tissue but also in cells which are considered as a source of monocytes or histiocytes (for instance, extrafollicular germinal cells of the cortex of the lymph nodes and the Kupffer cells). Therefore, it is evident that there is a similar way of reaction among precursors of mononuclears.

Finally, it is interesting to consider that these findings, which demonstrate a kind of electivity of antigens for certain undifferentiated or germinal reticuloendothelial cells, seems to accord with the concept that these cells function as producers of antibodies.

ASHLEY, L. M. (1945.) **A determination of the diameters of ventricular myocardial fibers in man and other mammals.**—*Amer. J. Anat.* **77.** 325–363. **147**

The author made a limited number of determinations of the mean diameter of Purkinje fibres in man, the dog and the sheep.

It is a comparatively simple matter to measure the approximate diameter of a transverse section of muscle fibre as seen with the microscope; even in the myocardium, whose fibres form a syncytium, transverse diameters can be measured. The difficulties lie in making preparations which will not distort the picture, and in making certain that the diameter of the fibre is measured at its maximum. The latter difficulty is easily overcome by measuring only true cross sections containing nuclei. The author describes technique for avoiding distortion.

In preference to ocular micrometry and planimetry, measurements were made with the area by weight method of Hammar, the slides being microprojected. The paper cut-outs were weighed and the cross sectional areas computed by means of the specific weight-area factors for the paper used. The mean diameters were then calculated by finding the radius of a circle of the given area, and doubling this to obtain the diameter.

Hearts of 32 human beings, from the seventh foetal month to the 87th year, four dogs and two lambs were thus submitted to measurement.

"A capillary: muscle-fiber ratio of 1 : 1 was obtained for a single dog heart which was especially favorable for obtaining this information. This figure is in agreement with those published by Wearn for man and for rabbits but none of these is considered high enough to represent the absolute capillary: fiber ratio existent in the living myocardium. Further research on living material is needed to corroborate or disprove this contention. Mean diameters were also determined for a limited number of Purkinje fibers in human, canine, and ovine hearts. These elements average approximately twice the diameter of the ordinary cardiac muscle fibers. Purkinje fibers in lambs under 1 year old were larger than those of men and dogs in spite of the fact that the canine hearts were all from adults and the human specimens were from children aged 10 and 12 years, respectively."

"The existence of a positive correlation between heart weight and mean fiber diameter, as pointed out by Wearn, has been confirmed."

—L. M. MARKSON.

PALLASKE, G. (1943.) Enzootische Muskeldystrophie bei Jungenten. [**Enzootic Muscle**

dystrophy in ducklings.]—*Dtsch. tierärztl. Wschr.* **51.** 124–130. **148**

This is a detailed description of the disease as it occurred in Frankfort (Oder) and Sneidemühl. The first cases were observed in these areas in 1937 after which the incidence decreased till 1940 when it increased to such an extent that about half of the ducklings received for examination were affected. The disease occurred primarily in ducklings from the smaller farms and the rate of recovery was from 30–100%.

The age incidence, clinical signs and histopathology are fully described and P. compares his observations with those of Seifried and Heidegger (1936)).

The possible aetiological role of vitamin deficiencies, dietetic deficiencies caused by the war, plant poisons, watering temperature, bacteria and a virus are discussed. Bacteriological examinations revealed no significant organisms while transmission experiments to prove the existence of a virus were negative. Mention is made of the similarity of the epidemiology and histo-pathology of this disease to those of fatal syncope in pigs [see abst. 75].—A. L. Wilson.

Gall, L. S., Stark, C. N., & Loosli, J. K. (1947.) **The isolation and preliminary study of some physiological characteristics of the predominating flora from the rumen of cattle and sheep.**—*J. Dairy Sci.* **30.** 891–899. **149**

Techniques were developed for culturing the predominant bacterial flora of the rumen so that their physiological activities could be investigated. These included a direct slide counting technique using an indirect stain to determine the success or failure of the cultural work; a method for obtaining a sample suitable for culture from a fistulated animal; an anaerobic procedure for growing bacteria in numbers indicated by the direct count; methods for determining the extent of urea utilization, and methods for determining the cellulose breakdown by the predominating bacteria. In the count technique a background stain was obtained with a half-saturated methyl alcohol solution of nigrosine which was mixed with the sample. The bacteria thus appeared white against a black ground. Success in culturing depended upon the continued maintenance of anaerobic conditions throughout. The samples obtained from the rumen were diluted to 10^{-12} and inoculations were made by pipetting the diluted samples into broth which had previously been placed for 10 min. in a boiling water bath and then cooled rapidly to 45°C. immediately before inoculation. Tubes were sealed with vaspar directly after inoculation to maintain anaerobic conditions. Details are given of two media which gave good results.

Incubation was at 38°C. Bacteria were present in the rumen contents in numbers of about 100 billion per g. of fresh material. The test for urea utilization was carried out by inoculating organisms isolated from dilution 10^{-10} and 10^{-11} into inorganic salt broth containing 1% glucose 0·04% urea and 20 μg. of each of the following vitamins: thiamine, riboflavin, pyridoxine, pantothenic acid, niacin, and *p*-aminobenzoic acid and 0·05 μg. of biotin. The pH of the broth after all additions was 6·5. Many of these cultures were capable of utilizing urea and of breaking down cellulose. A few of the bacteria isolated from the highest dilution of rumen contents were mostly Gram-positive, non-motile anaerobic bacilli and a few cocci.—C. Horton Smith.

Selle, W. A. (1945.) **Action of certain sulfonamides on anaerobic activity of respiratory center of young animals.**—*Proc. Soc. exp. Biol., N.Y.* **58.** 24–26. **150**

Young rats were given non-toxic intraperitoneal doses of one of the following:– sulphanilamide, sulphathiazole, sulphadiazine, or sulphamerazine. The first two drugs had a beneficial effect on certain anaerobic enzyme systems which are associated with the functioning of the respiratory centre and with its survival, as judged by the gasping which occurs for a few minutes after the death of the animal. There was an increase in the anaerobic survival and in the overall energy release.—J. Keppie.

Haq, I. (1948.) **Some morphological characteristics of the epithelial cells lining the genital tract of the bull.**—*Vet. J.* **104.** 5–22. **151**

In order to establish the identity of the epithelial cells found in ejaculated bull semen, the genitalia of a bull were removed to the laboratory almost immediately after slaughter and sections and macerated scrapings of epithelium were made at different levels of the genital tract. The comparative shapes and sizes of the cells were the points most considered. The thickness of epithelium, the diameter of the seminiferous tubules and the changes in cells undergoing desquamation, were also studied.

Cells were grouped according to shape as squamous, polyhedral, columnar and ovoid, and the groups subdivided according to size. In this way, H. attempted to establish characteristics by which cells could be recognized. Measurements and brief morphological features are tabulated in relation to the origins of the cells.—L. M. M.

Haq, I., & Rollinson, D. H. L. (1948.) **Epithelial cells in the preputial washings of bulls.**—*Vet. J.* **104.** 41–48. **152**

An injection of 150 ml. of sterile, normal saline containing 2% glucose, was made into the preputial cavity and, after gentle massaging,

recovered. The washings were centrifuged and the sediment examined microscopically. The animals examined comprised three normal bulls, ten infertile ones with a normal prepuce, nine normal or sterile bulls harbouring *Ps. aeruginosa* in the preputial cavity and seven with balanitis of bacterial or trichomonad origin.

The distinguishing features of epithelial cells from different parts of the preputial mucosa are described and illustrated in some detail. The authors conclude that in normal washings the great majority of epithelial cells are from the superficial layer. In superficial inflammation this may remain the same, with the addition of pus cells and bacteria. In cases of deep seated inflammation there is an increase of cells from the middle and basal layers of the epithelium, with a corresponding decrease of superficial cells. The authors consider that the presence of deep cells coincident with a granular inflammation of the prepuce and no evident bacterial infection is characteristic of *T. foetus* infection. In the concentrated washings, leucocytes averaged 4, 18 and 86 per field in mild, moderate and severe inflammations respectively.

—L. M. Markson.

Gladtsinova, E. F. (1940.) Vliyanie nizkikh temperatur na protsessy obmena veshchestv v sperme. **[Effect of low temperature on metabolism of spermatozoa.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 214–219. **153**

The intensity of the metabolism of ram semen preserved outside the body is in direct proportion to the temperature at which it is maintained. Glycolysis decreases with decrease in temperature and becomes negligible at 0°C. Respiration decreases with decrease in temperature, but is at 0°C. proportionately more active than glycolysis. At a temperature of 0°C. ram semen is able to oxidise lactic acid.

The acidity of ram semen increases rapidly in aerobic conditions at 20°C.; it becomes alkaline at 10°C. and alkalinity increases at 0°C.

—K. A. A.

See also abst. **179** (comparative morphology of vertebrates).

Cowles, R. B., & Nordstrom, A. (1946.) **A possible avian analogue of the scrotum.**—*Science.* **104.** 586–587. **154**

Consideration of the phenomenon of heat-induced sterility led to an investigation of the problem in birds, in which class the gonads are intra-abdominal. As physiological experiment failed to demonstrate the presumable existence of temperature differentiations between the testes and the rest of the body, morphological characteristics were studied. Blackbirds were chosen for the experiment and with the dead bird placed in the upright position the abdominal air sacs were injected with latex. Series of observations were made during the course of two successive seasons. During the warm spring months the testes migrated a short distance downward and backward, thus being enveloped between the two dorsal folds of the abdominal air sacs. The suggestion is made that this provides a location for cooling the active testes analagous with the mammalian scrotum.

—C. W. Ottaway.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Robinson, C. H., Hlynka, I., Herman, F. A., & McArthur, J. N. (1947.) **Calcium content of fluid milk.**—*Canad. J. publ. Hlth.* **38.** 236–239. [Authors' summary copied *verbatim.*] **155**

The calcium content of fluid milk was determined at weekly intervals for one year from representative dairies in Ottawa, Ont., Kentville, N.S., and Summerland, B.C. The mean values were 117, 112 and 139 mg. Ca per 100 ml. milk, respectively. There was a highly significant difference between the means for the areas. There was not significant difference between the mean values of individual dairies in Ottawa, but there was a difference between dairies in the other two areas.

It is concluded that if the error of ±20 percent is too great for purposes of dietary survey, the mean calcium content of the fluid milk for the area under survey should be determined.

Košík, O. (1947.) Pracovní postup ve veterinárních ústavech zužitkovacích. **[The methods used in work at abattoirs.]**—*Čas. československ. Vet.* **2.** 82–90. **156**

A general account of the operation of abattoirs, with photographs of two of them. Details are given of the processes of dealing with fat, the preparation of meat and bone meal, etc.—E. P.

Pallaske, G. (1945.) Zur pathologischen Anatomie fleischbeschaulich wichtiger Tuberkuloseformen. **[Pathology of the chief types of tuberculosis met with in meat inspection.]**—*Tierärztl. Z.* No. 2/3. pp. 28–30. **157**

P. summarized the pathology of several well-known forms of TB. to facilitate their easy recognition to the extent that this is possible without bacteriological examination.—A. L. Wilson.

McDermid, A. M. (1946.) **Food Poisoning.**—*Amer. Fur Breed.* **19.** No. 4. pp. 18, 22, 26, 30 & 34. **158**

Food poisoning as it affects mink is discussed under the headings:—(a) ptomaine poisoning; (b) chemical;—refrigeration, disinfectants, in-

secticidal sprays; (c) "other" bacteria—souring; (d) botulism; (e) infections of intestinal tract.

Case histories illustrate the various types of poisoning. Methods are given of prevention and control, with emphasis on hygiene.—H. PAVER.

GORESLINE, H. E. (1947.) **A discussion of bacteriological standards for dehydrated foods.**—*Amer. J. publ. Hlth.* **37.** 1277–1283. **159**

The storage quality of dehydrated food depends largely on its initial freedom from contamination, but this is influenced also by the amount of moisture remaining in the finished product. It is essential therefore to ensure that the raw material shall be as germ-free as possible and shall be kept so throughout the whole of the processing. Attempts have been made to establish legal standards of purity but they have not so far been successful. G. recommends direct bacterial counts with the microscope rather than plating. No human epidemics have so far been traced to dehydrated food, although *Salmonella* infected eggs are common, but the risk is always present and the monetary loss from spoilage is considerable. —R. MACGREGOR.

ALDRIDGE, F. F. (1947.) **Contributions of the sanitary engineering program of UNRRA to international health.**—*Publ. Hlth Rep., Wash.* **62.** 1729–1739. [Abst. from author's conclusions.] **160**

From the experience of UNRRA's sanitary engineering efforts, it is apparent that any international organization which is concerned with promoting the health of human beings on a long-term basis must give first consideration to the prevention of disease rather than the cure. The application of sanitary engineering principles should be one of the bases for prevention work in connection with water, food, and insect-borne diseases.

The sanitary engineer is one of our strongest guardians of human health, and his services should be utilized to the fullest extent wherever an engineering prevention and control programme is indicated.

ANON. (1945.) 15 let Troitskovo veterinarnovo instituta. [**15 years of the Troitsk Veterinary Institute.**]—*Veterinariya, Moscow.* No. 1. p. 46. **161**

A brief note giving figures concerning the numbers of the various categories of staff and about the students who have graduated. There were 700 veterinary graduates, 420 first aid men, 1,528 technicians trained in artificial insemination, in addition to certain other special categories of assistants.—K. A. ALLEN.

See also absts. **4** (tuberculosis in milk); **181** (food inspection notes: A handbook for students); **182** (Sanitary Inspector's handbook).

REPRODUCTION AND REPRODUCTIVE DISORDERS

BONADONNA, T. (1941.) Studi e ricerche sperimentali nella diluizione e nella conservazione dello sperma bovino in particolare (Sintesi e contributo personale). [**Studies on the dilution and preservation of cattle semen. (Review and personal contribution.)**]—*Fecond. artif., Milano.* **3.** No. 1. 2–3, 5–7, 9–10; No. 2. 2–7, 9–18; No. 3. 6–7, 9, 11, 13–15, 17; No. 4. 12–15, 17–20. **162**

The diluting fluid should have the following properties:—be isotonic for the species, harmless to the lipoid capsule, without effect on the electrical quality thereby causing agglutination, able to provide a "buffer" action, and contain sufficient nutriment to maintain the vitality of the spermatozoa.

One hundred and fifteen diluents were tested with semen from 75 bulls. Egg yolk proved most effective to which dibasic sodium phosphate and monobasic potassium phosphate were added bringing the pH to between 6·15 and 7. Blood serum from the testicular veins, rich in natural testosterone had a beneficial effect, but not synthetic testosterone. Dilutions of 1 : 4 give the best results but they can be as low as 1 : 16. The insemination may be carried out with gelatin capsules, provided the total gelatin is less than 5% of the semen. The fluid is stored at 0°C., transported in thermos flasks and the capsules filled just before use. Capsules of dextrin and gum arabic are also useful. Semen so diluted can be stored at 0°C. for 114 hours.—R. MACGREGOR.

HUPKA, E. (1940.) Uber Spätblutungen bei Kühen im Anschluss an die Geburt. [**Post-parturient haemorrhage in cows.**]—*Dtsch. tierärztl. Wschr.* **48.** 241–242. **163**

Haemorrhages from the lateral wall of the vagina during dystocia usually heal spontaneously by thrombus formation even when the posterior uterine artery is involved. Not infrequently these vaginal haemorrhages recur 10–20 days later and are then usually fatal. They are due to the invasion of the thrombus by pyogenic bacteria. In the fatal cases investigated by H., the wall of the artery was destroyed by sepsis and the vaginal tear was filled with granulation tissue in which the funnel-shaped stump of the artery was embedded.

Because of the narrowness of the vagina at that time it was impossible to control the haemorrhage by using artery forceps. Packing the entire vagina with towels was unsuccessful because of

the difficulty of applying pressure on the artery. Cold douches, the injection of haemostatic agents and saline solution were also of no avail.

The best treatment consists of ligaturing the artery when the haemorrhage occurs at parturition since the width of the vagina allows forceps to be used with ease. H. left the forceps in the vagina for eight days and there were no unfavourable sequelae. Such haemorrhages are important in cattle that are sold soon after calving.—A. L. W.

KENNEDY, A. J. (1947.) **Retention of the placenta in the bovine.**—*Vet. Rec.* **59.** 519–523. Discussion pages 523–528. **164**

The condition is of considerable importance economically in both Europe and America. K. records a percentage of 8·3 of retained placenta in 395 calvings and quotes only one of many American reports, a percentage of 11·7 in 125 cows, in which the condition is shown to be a major cause of economic loss. In 301 clinical cases he records 9·6% following abortion, 7% following twin pregnancy, 7% with mastitis, 5·7% with infections or injuries of the vagina or vulva, 6% with malnutrition, 5% with milk fever, 8% with congestion of the lungs or pneumonia, 4% with diarrhoea, 5% resulting from accidental causes, including dystocia, and 5% following injuries during transportation by road.

Bacterial infection is the important factor in causing damage to the organs at parturition and afterwards. Manual removal of the placenta should usually be carried out only after involution has commenced, about the second to the fourth day after parturition. Normal expulsion of the placenta should take place within eight hours or shortly after. Where metritis has already set in, manual removal of the placenta may aggravate the condition. In most other cases careful manual removal of dead tissue, as soon as this is possible, is an advantage. The use of stilboestrol to expel the placenta is not recommended as it causes congestion of the uterus and an increase of secretion.

CHAPMAN considered that the condition was less prevalent since the use of anti-abortion vaccine had become more general. He agreed that not more than 10% of cows calving retain the placenta and that the ill effects on animals were of considerable importance. Many cases of retained placenta occur in twin pregnancy and also in cases of dystocia as well as after mastitis due to *Corynebacterium pyogenes*. Most of the cases occur in herds where clinical abortion exists. In herds kept under natural conditions on the pastures retention of the placenta is less common. CHAPMAN stated that he usually waits two or three days after a calving before attempting to remove a retained placenta. He uses pituitrin when a uterine stimulant is necessary but when there is much fluid in the uterus he prefers stilboestrol in doses of 30–50 mg. In toxic cases he uses sulphanilamide or sulphapyridine *per os* and as pessaries or in powder form in the uterus. He also uses iodoform pessaries "as a deodorant". ROBINSON stressed the danger to the patient of retention of portions of the placenta and of septic fluid. Prolonged manipulation of the uterus should be avoided. He advocated using small quantities of antiseptic fluid after syphoning off the fluid contents of the uterus. He had not found stilboestrol of any value. ADAMSON claimed success after administering 20–30 mg. of stilboestrol intramuscularly and also sulphanilamide or sulphapyridine 1 oz. or half an oz. of each capsule *per os*. If the membranes were not expelled by the ninth day they were removed manually. He had one death in some hundreds of cases. COOK and WRIGHT agreed with Adamson's policy of non-interference in cases where parturition had been normal.

Other speakers mentioned the adverse effect of weaning calves at birth, the importance of removing fluid contents from the uterus during any form of treatment to avoid sepsis and also the effect of the presence of organisms which were resistant to the sulphonamides. Psychological factors appear to be of importance and also the effects of travelling by motor transport.—J. A. G.

KUDRYASHOV, M. V. (1945.) Lechenie endometritov u korov stil'bestrolom i sinestrolom. **[Treatment of endometritis in cows with stilboestrol and synoestrol.]**—*Veterinariya, Moscow.* No. 4–5. 32–34. **165**

Daily subcutaneous injections, from 1–5 in number, of 15–30 mg. of stilboestrol (0·5% soln.) or 20–30 mg. synoestrol (1% soln.) are equally effective in curing endometritis in cows.

Of 11 cows sterile as a result of chronic catarrhal endometritis nine were cured. In a group of 14 cows which had catarrhal endometritis, together with persistent corpora lutea, nine were cured.

Oestrus, ovulation and conception were normal in the successfully treated cows.—L. L.

CURASSON, G. (1947.) Les avortements chez la chamelle. **[Abortions in the camel.]**—*Encyclopéd. vét. périod.* **4.** 74–76. **166**

The most common cause of abortion in the camel is trypanosomiasis but it may follow other febrile conditions and mechanical and toxic abortions also occur. Salmonellosis and also brucellosis may cause abortion but in the latter case the evidence rests on serological tests only.
—S. J. GILBERT.

JURNÝ, F. (1946.) Kryptorchismus u domácích

zvířat. **[Cryptorchidism in domestic animals.]** —*Čas. československ. Vet.* **1.** 25–33. **167**

The causes of cryptorchidism (inguinal, complete and incomplete abdominal) are outlined. It occurs in all domestic animals, but affects especially the economic value of stallions and boars.

Cryptorchidism is less frequent in ruminants and canines. A genuine cryptorchid is non-fertile, but fertile if one-sided. The latter anomaly is frequently found to be hereditary.

The difficulties of diagnosis of cryptorchidism are described and useful hints are given.

A description of the preparations necessary for surgical treatment, of its execution and of post-operative treatment is given. Some interesting cases from the author's 25 years of practice are mentioned.—K. A. Allen.

Seegal, B. C., & Loeb, E. N. (1946.) **The production of chronic glomerulonephritis in rats by the injection of rabbit anti-rat-placenta serum.**—*J. exp. Med.* **84.** 211–222. **168**

An investigation into the possible role played by the placenta in the causation of toxaemia. 144 young adult hooded rats were maintained on a controlled diet and divided into groups of varying size. Five different types of serum were used as inocula, a different type for each group of rats: group I, rabbit anti-rat-placenta serum; group II, rabbit anti-rat-kidney serum; group IV, rabbit anti-rat-erythrocyte serum; group V, rabbit anti-rat-serum serum; group VI, normal rabbit serum. Group III, 55 in number, received no injections. The potency of the antisera was estimated *in vitro* against the appropriate antigen. Samples of urine were collected every 2–4 weeks and examined qualitatively and quantitatively for albumin. When albuminuria was such as to indicate renal damage, the non-protein nitrogen content of the blood was determined. Random erythrocyte counts were made 2–4 days after inoculation. The animals were sacrificed 3–14 months later and their kidneys examined histologically.

In group I, 18 out of 32 rats developed chronic glomerulo-nephritis, the course and renal lesions being indistinguishable from those obtained in 11 out of the 13 rats in group II. Similar lesions occurred in six out of the 99 controls: two out of 23 in group IV, two out of 14 in group V, two out of the 55 uninoculated normal stock (group III) and none in group VI.—L. M. M.

See also absts. **16** (*Corynebacteria pyogenes* in the sheath of bulls); **87** and **88** (congenital defects after rubella infection of the mother); **143** (oestrogens); **151** and **152** (epithelial cells of sheath in bulls); **153** (spermatozoa); **154** (temperature of scrotum).

ZOOTECHNY

Seath, D. M., & Miller, G. D. (1947.) **Heat tolerance comparisons between Jersey and Holstein cows.**—*J. Anim. Sci.* **6.** 24–34. **169**

Jersey and Holstein milch cows, kept under identical conditions in the late summer in Louisiana, the average temperature being 85·1°F., were studied for short periods in 1944 and 1945. Respiration rates, pulse rates and temperatures were recorded and these were correlated with air temperature and relative humidity. Total and partial correlations and multiple regressions were estimated.

The body temperature of Holstein animals averaged 103·3°F. and that of Jerseys 102·6°F. in 1944. There was no apparent difference between breeds for respiration or pulse rates. The rate of increase in temperature related to air temperature was greatest in the case of Holsteins. The percentage of white skin on Holsteins had no measurable effect on temperature.—G. L. Bailey.

Kershaw, G. F. (1946.) **The part played by animal transport in crossing the Gothic line.**—*J. R. Army vet. Cps.* **17.** 125–130. **170**

Animal transport was of great importance during the war in Italy. The use of pack animal transport companies is illustrated by an account of the operations of the 4th Indian Division during the Gothic Line battle. Mules brought supplies to the front lines from a position up to which supplies could be carried by the mechanized transport; mule transport was particularly useful in rough mountainous country. Mules gave good service at river crossings impassable to mechanized transport. Mules and jeeps proved to be a most useful combination.—S. B. Kendall.

TECHNIQUE AND APPARATUS

Dreyfuss, F. (1947.) **Use of papain in cultivation of bacteria from the blood.**—*Amer. J. clin. Path.* **17.** 365–371. **171**

A 2% suspension of papain in normal saline which, after filtration through paper and a Seitz filter and keeping in a refrigerator, formed a clear, yellowish fluid of *p*H 6·4, was found to have sulphonamide-inhibiting properties, to decrease penicillin activity, to fix complement, to be anticoagulant (5 ml. blood with not less than 3 ml. papain-saline), and to be itself a nutrient medium. It caused also fibrinolysis of clotted blood. Papain-

saline was added to plain broth or brain-heart infusion in a 10% concentration; it did not inhibit the growth of bacteria; *Staphylococcus aureus*, *Salmonella typhi*, and streptococci were stimulated in growth. In papain-saline without broth, staphylococci, various streptococci, and laboratory strains of *Brucella melitensis* and *S. typhi* were able to grow. The growth-promoting effect was especially evident for streptococci (viridans group), and a micro-aerophilic strain of *Clostridium butyricum*, which did not grow in brain-heart infusion, could be cultivated in papain-saline brain-heart infusion. The method of using it is as follows:—To each of two Erlenmeyer flasks, one containing 3 ml. of 2·5% sodium citrate solution, and the other 5 ml. of papain-saline, 10 ml. of venous blood was added. From each flask two plates were poured, using 1 ml. blood for each plate and 2% glucose-agar. To the remaining blood 50 ml. of brain-heart infusion (difco) was added to each flask. The cultures were incubated at 37°C. for seven days, examined daily with Gram stain, and subcultured on rabbit-blood agar and other media if necessary. When a positive result was obtained for one flask, the other was kept for control up to seven days. *p*-aminobenzoic acid was added to specimens containing sulphonamides, but only to cultures without papain-saline. When anaerobic organisms were suspected, another 1 ml. from the Erlenmeyer flasks was transferred to Tarozzi medium; when brucellosis was suspected, cultures were taken and handled separately. The method has been used in cases of septicaemia and subacute bacterial endocarditis. The advantage over ordinary cultures is in the enhancement of growth in isolation of *S. aureus* and streptococci of the alpha-haemolytic type. Organisms for which the papain medium was not suitable were *Cl. botulinum*, *H. influenzae*, and several strains of *S. albus*.
—J. R. Scott.

Izumi, J. (1947.) **Clorox and tergitol-javelle water mixture for acid-fast bacilli concentration. A comparative study.**—*J. Lab. clin. Med.* **32.** 210–212. [Author's conclusion and summary copied *verbatim*.] **172**

One hundred seventy-one sputum specimens were examined by both the clorox and the tergitol-javelle water mixture methods. Out of a total of seventy-one positive specimens the method using tergitol-javelle water mixture gave more positive results and exhibited better ability to concentrate the bacilli than did the clorox method. The treatment of the acid-fast bacilli with the mixture of tergitol-javelle water does not show the impairment in staining that occasionally occurs when treated with clorox. For these reasons it was decided to abandon the use of clorox in favor of tergitol-javelle water for concentration purposes.

Lillie, R. D. (1947.) **Reactions of various parasitic organisms in tissues to the Bauer, Feulgen, Gram, and Gram-Weigert methods.**—*J. Lab. clin. Med.* **32.** 76–88. **173**

The appearance of the morphological constituents of a large number of different micro-organisms and animal parasites in tissues in response to a number of staining procedures is recorded. In particular the Bauer-positive polysaccharides of certain micro-organisms provide a valuable means for detecting certain organisms in the tissues even when only small numbers are present.—A. Mayr-Harting.

Richman, I. M., Gelfand, M., & Hill, J. M. (1947.) **A method of decalcifying bone for histologic section.**—*Arch. Path.* **44.** 92–95. [Authors' summary copied *verbatim*.] **174**

A very effective means for removing calcium compounds from bone with minimal injury of tissue has been shown to result from the use of an electrolytic bath with 8 per cent hydrochloric acid and 10 per cent formic acid as the electrolytic medium.

REPORTS

—. (1946.) **The N.F.U. year book for 1946.** pp. 212. London: The National Farmers' Union. 8vo. 5s. Items of veterinary interest pp. 15, 19, 44–49, 53–54, 74, 78–80, 110, 124 & 126. **175**

The greater part of the book consists of the annual report of the council reviewing the work of the year. Among the items of especial veterinary interest which were dealt with were the licensing of new artificial insemination centres, Foot and Mouth Disease, Tuberculosis, veterinary education and immunization against Johne's Disease, Swine Fever, and Contagious Abortion.—M. C.

Colony of Mauritius. (1945.) **Annual report of the Department of Agriculture, 1944.** [Bodkin, G. E.] pp. 30. Port Louis: J. H. Bowkett. 8vo. 50 cents. Items of veterinary interest pp. 4 & 25–27. **176**

The importation of cattle from Madagascar for food amounted to 11,494 head and from Rodrigues to 102. The total number of cattle on estates at the beginning of 1944 was 10,123 as against 11,672 the previous year. Ten pure-bred Friesland bulls were imported from South Africa, and after a quarantine period were distributed to five centres in the Colony.

Two hundred and sixty-six animals were tested with Weybridge tuberculin, of which 17 reacted and were consequently slaughtered. No case of TRYPANOSOMIASIS was recorded out of 7,970 animals clinically examined, and 1,089 sheep affected with *Haemonchus* were successfully treated with nicotine, copper sulphate, arsenic solution. Fifteen cases of abortion in cows were recorded.—D. S. RABAGLIATI.

DU TOIT, P. J. (1947.) **Safeguarding the Union's livestock industry.**—*Fmg S. Afr.* **22.** 973–996 & 1158. **177**

This report covers the activities of the veterinary services from July 1946 to June 30th, 1947, and is divided into two sections (a) research and (b) field work. Section (a) deals with laboratory products, bacteriology, protozoan diseases, virus diseases, the Allerton laboratory, parasitology (helminthology and entomology), biochemistry, nutrition, physiology, toxicology, surgery (obstetrics, etc.), chemical pathology, morphology (covering research into obscure diseases), medicine and therapy, zootechny, meat and wool research, and statistics. Section (b) deals with ANTHRAX, BOVINE TUBERCULOSIS, EPIZOOTIC LYMPHANGITIS, NAGANA, EAST COAST FEVER and the arsenic-resistant blue tick, FOOT AND MOUTH DISEASE, RABIES, SCAB, MANGE and LUMPY SKIN DISEASE.

In the section on protozoan diseases a short account is given of the methods adopted to control NAGANA and tsetse fly by the use of D.D.T., game destruction, clearing, pupa and fly counts, and the treatment of infected cattle. The Mkuzi game reserve was given eight treatments with D.D.T. in smoke form and applied from aircraft at fortnightly intervals. The catch of tsetse in 356 Harris traps, in the area, dropped from 2,046 flies in August 1946 to 14 in January 1947, since when there was a small rise to 35 in May, and 24 in June 1947. During D.D.T. smoke application it was found that 70–100% of all flies collected in the treated area within three days, and fed on cattle, died. This was ascribed to the residual effect of D.D.T.

Fly and pupa surveys have given valuable information on the spread of tsetse flies, and their breeding places, and *G. austeni* has been found to occur along the Mkuzi river. Treatment of cattle with phenanthridinium compound, S.897, and phenanthridinium compound, 1553, is said to have been satisfactory. No improvement in the NAGANA picture for the year is claimed. Under bacteriology it is noted that in work on contagious abortion, a few outbreaks of ABORTION caused by *Trichomonas foetus* were encountered.

The section on chemical pathology records that it has been found that the stability of "666" and D.D.T. in dip preparations is not too satisfactory, and a note under "field work" states that although the arsenic-resistant blue tick yields to D.D.T. and benzene hexachloride, the use of arsenical preparations in cattle dips is still enforced in EAST COAST FEVER infected areas.

At the Allerton laboratory one case of TOXOPLASMOSIS was encountered in a fowl.

During the year infection with RABIES was established in four cattle, one pig, three dogs, one cat, five mongoose and one jackal. The loss of two horses vaccinated against AFRICAN HORSE SICKNESS is noted. An extremely virulent strain of BLUETONGUE has been encountered, and a new vaccine has been prepared containing three virus strains. Ferrets have been found to be susceptible to BLUETONGUE, and the virus can multiply in small wild rodents which may act as reservoir hosts. Cases of PSITTACOSIS in pigeons were encountered at the Allerton laboratory. Sulphapyridine and sulphamethazine can be used for the treatment of HEARTWATER, uleron being practically unobtainable. In the section on medicine and therapy it is stated that the best treatment for RICKETTSIOSIS of dogs is the intravenous injection of sulphamethazine. Whilst the mortality of dogs in the Kruger national park in 1938 was 100%, now, owing to this treatment, the mortality is only 10%.

No animals other than cattle have been found to be susceptible to LUMPY SKIN DISEASE. In the surgery section there are some interesting notes on the absence of transmission of ROARING in horses from the sire, on the crossing of Afrikander and Sussex cattle and on the breeding of Zebu cattle.—U. F. RICHARDSON.

BOOK REVIEWS

MARTINI, E. (1946.) Lehrbuch der Medizinischen Entomologie. **[Textbook of medical entomology.]** pp. xvi × 633. 322 figs. Jena: Gustav Fischer. 3rd Edit. revised. **178**

The term "medical entomology" is used by the author in its widest sense, for all groups of arthropods of medical and veterinary importance are given some mention. Naturally, with such a large field to cover certain of the topics appear to be treated too superficially, but on the whole the work is a valuable textbook on this branch of applied science.

The introductory part consisting of some hundred pages mainly devoted to morphology and development, includes a general account of arthropods, together with a very useful section on

ecology. This is followed by two hundred pages on the arthropods as parasites with emphasis on insects and arachnids. This section includes morphological descriptions of the various orders, information of biological importance, and in some cases keys to genera, and occasionally species. Mention is also made of control measures.

A short section is devoted to an account of toxic materials produced by various arthropods, although little is said about their physiological action. This is followed by a section of two hundred pages covering the arthropods as carriers of protozoa, fungi, bacteria, rickettsia and viruses. Some thirty pages are devoted to control measures in general and descriptions are given of the technical methods of applying remedies along with the various materials available as insecticides or acaricides.

The bibliography of nearly one thousand titles includes many references to work carried out on the continent during the second World War. It should prove of very great value to British scientists as a guide to such literature. In the circumstances it is unfortunate that there is no author index, the references being arranged under section headings.

The book is clearly printed on high-class paper and contains many excellent illustrations.

—J. B. CRAGG.

PORTMANN, A. [Dr., Professor of Zoology, University of Basle]. (1948.) Einführung in die vergleichende Morphologie der Wirbeltiere. **[Introduction to the comparative morphology of the vertebrates.]** pp. 335. 253 figs. Basle: Benno Schwabe & Co. Swiss Fr. 28. **179**

The main objective of this work is to present comparative morphology as the key to an appreciation of the general pattern of biological principles, and in this the author has achieved an undoubted measure of success. It might be argued, however, that in so doing functional considerations should be uppermost, and more examples might have been given of the functional significance of the structures described. He surveys the systems of the vertebrate body in logical sequence according to the generally accepted formula; but in his review of the locomotory system it is a pity an excellent beginning is not extended to consideration of details of limb musculature, necessary for a thorough understanding of the evolutionary pattern of this important system.

The book is profusely illustrated with orthodox but nevertheless excellent drawings. It should prove of great benefit to morphologists and vertebrate biologists.—C. W. OTTAWAY.

THOMSON, D. [O.B.E., M.B., Ch.B., D.P.H., Director of the Pickett-Thomson Research Laboratory], THOMSON, R. [M.B., Ch.B., Pathologist, St. Paul's Hospital, London], & MORRISON, J. T. [M.D., D.P.H. (Aberdeen)]. (1948.) **Oral vaccines and immunization by other unusual routes.** pp. xi+329. 5 figs., numerous tables. Edinburgh: E. & S. Livingstone, Ltd. 11 in. × 8½ in. Price 42s. **180**

The work of BESREDKA on the absorption of bacterial vaccines mixed with bile from the alimentary tract stimulated interest in the possible value of oral vaccination. At one time it was thought that this method might eventually replace the parenteral administration of vaccines. Apart from some isolated examples, however, the concensus of opinion is against this form of immunization as a practical means of evoking a strong protection, largely on account of the relative impermeability of the gastro-intestinal tract except in the newly-born.

Nevertheless, a considerable literature on this subject has developed and the authors of this book have performed a useful service in collecting about 1,200 references. The first section of the book is concerned with the theories of vaccination by routes other than parenteral while the main part deals in turn with diseases (chiefly of man) in which oral vaccination is claimed to be of value, *e.g.*, typhoid, dysentery, cholera, plague, tuberculosis and so on. There is a useful section on immunization by unusual routes such as the respiratory tract, skin, etc.

Although the authors have endeavoured to present the facts in proper perspective, much of the information is not considered in a very critical manner and many of the clinical trials which are alleged to support the value of oral vaccinations would not bear statistical analysis. Where the writers discuss diseases in which vaccines given by the mouth do appear to afford some protection, *e.g.*, typhoid, the claims would seem to receive some support, but the evidence becomes less convincing when they deal with such diseases as influenza, the common cold, smallpox, measles and other virus infections and eventually advocate the prevention and treatment of pyorrhoea by killed bacterial suspensions incorporated in toothpaste.

The book is one which cannot be strongly recommended but may be of value as the only comprehensive publication on this particular subject.—R. E. GLOVER.

HILL, H. [F.R.San.I., F.S.I.A., A.M.I.S.E., "Ollett" gold medallist], & DODSWORTH, E. [M.R.San.I., M.S.I.A., Chief Sanitary Inspector, Borough of Harrogate]. (1947.) **Food inspection notes. A handbook for students.** pp. vii+123. 5 tables. London: H. K. Lewis & Co., Ltd. 2nd Edit. 6s. **181**

This is the second edition of one of the now

numerous modern works on food inspection and it would seem that the authors' hope in producing a volume to meet a well-known need, namely, "a condensation of present-day knowledge of foods and their inspection, clearly presented and stripped of all superfluous matter" has been well achieved, especially as the second edition has been called for since its first publication in 1943. It is a highly condensed little book measuring 7 in. × 4½ in.

The essentials of food inspection are, in fact, clearly presented in the smallest possible space and the authors are to be congratulated on producing a veritable "multum in parvo", even if here and there discrepancies can be noted. Almost half of the work deals with meat inspection proper and the remainder with the inspection of rabbits, poultry, fish, tinned and other preserved foods and also milk. Notes are included on food poisoning and food sampling and there is a useful glossary of important terms, a bibliography and an index.

No less than 27 pages are devoted to a description of some of the diseases of animals and here certain errors and omissions are detectable which could no doubt be rectified in a later printing or revision. For instance, cattle plague is stated (presumably referring to this country) to be "a very rare disease" and bovine contagious pleuro-pneumonia to be "very seldom seen in this country", whereas it is well known that neither now exists. The statement is made that tuberculous lesions are more common in the spleen of cattle than in the kidneys, which, unless the spleen capsule is referred to, cannot be accepted. The rather questionable assertion is also made that "in cattle up to four years of age, spleen affected more than kidneys and conversely if over four years". Perhaps a more serious omission, under the description of foot and mouth disease, is that the pig is not mentioned as a susceptible animal, whereas the recognition of lesions in pig carcasses is of the utmost importance.

Under mammitis only two types are described, simple and suppurative, while at least one other should have been mentioned in this connexion, namely specific or tuberculous. The authors also speak of septic mastitis as affecting all four quarters of the udder, while it is quite common to find it in one only. While we mention these points in the book, we do not in any way wish to detract from the value of the work, as a pocket edition, for the elucidation of many of the ever occurring problems which puzzle the food inspector so frequently in his daily work.—D. S. Rabagliati.

Clay, H. H. [F.R.San.I., F.I.S.E., Fellow of the Sanitary Inspectors' Association, Major, R.A.M.C.—late of the Army School of Hygiene] (1947.) **The sanitary inspector's handbook. A manual for sanitary inspectors and other public health officers.** pp. xxii + 546. 99 figs. London: H. K. Lewis & Co., Ltd. 6th Edit. revised. 22s. **182**

Although this book has been written primarily for sanitary inspectors, the parts dealing with milk and milk production, meat inspection and food control are of veterinary interest. The work has already run into six editions, having been first published in 1933 with an introduction by Sir Wilson Jameson, Chief Medical Officer to the Ministry of Health.

The author traces the evolution of Public Health law from its inception and the coming into force of the first Public Health Act in 1848, which he looks upon as the genesis of the modern Public Health legislation up to the present time. The training, methods of appointment and the various duties of sanitary inspectors are clearly described. The relative legislation is quoted.

The author then describes the many duties of the sanitary inspector: dealing with nuisances, smoke abatement, housing and the housing acts, building, drainage, factory acts, control of infectious diseases and other tasks allotted to the sanitary inspector.

The part of the book appealing most to the veterinarian is that dealing with dairies and milk production, which is considerably detailed, although the chapter on the construction of dairies and cow houses is rather sketchy. Under the various milk enactments one notices that the differences obtaining in Scotland as compared with England are lightly passed over and no mention at all is made of the Milk (Special Designations), (Scotland) Orders, which differ in no small degree from their counterparts in England. Moreover, while Memo. 62 Foods, is quoted at great length any reference to the Scottish Meat Regulations appears to be omitted. Perhaps, however, this book is only intended for the English, student.

The chief diseases communicable from animals to man are mentioned in some detail together with a description of animal parasites and the duties of a food inspector with regard to the inspection of rabbits, poultry and game.

There is a useful memorandum on weights and measures, also a glossary of technical building terms and an excellent index.—D. S. Rabagliati.

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